Scarborough Project

Cultural Heritage Management Plan

5 January 2023

Revision 0

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ACRONYMS AND ABBREVIATIONS

Acronym	Description
ACHA	*Aboriginal Cultural Heritage Act 2021* (WA)
AHA	*Aboriginal Heritage Act 1972* (WA)
AHIS	Aboriginal Heritage Inquiry System
ALARP	As low as reasonable practicable
ATSIHPA	*Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth)
AWTI	Above water tie-in
BHD	Back hoe dredge
CHMP	Cultural Heritage Management Plan
DAWE	Department of Agriculture, Water and the Environment (now DCCEEW)
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DoEE	Department of the Environment and Energy (now DCCEEW)
DPLH	Department of Planning, Lands and Heritage
DSDMP	Dredging and Spoil Disposal Management Plan
EP Act	*Environmental Protection Act 1986* (WA)
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act (1999)*
GNSS	Global Navigation Satellite System
IFC	International Finance Corporation
KP	Kilometre point
LACHS	Local Aboriginal cultural heritage service
MAC	Murujuga Aboriginal Corporation
MNES	Matter of National Environmental Significance
NAC	Ngarluma Aboriginal Corporation
OHP	Other Heritage Place
PV	Deep water pipelay vessel
RIV	Rock installation vessel
ROV	Remotely operated vehicle
SHB	Split hopper barge
SSS	Side scan sonar
SWLB	Shallow water lay barge
TSHD	Trailing suction hopper dredge
UCHA	*Underwater Cultural Heritage Act 2018* (Cth)
UCH Convention	Convention on the Protection of the Underwater Cultural Heritage
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples

Executive Summary

Proposal name	Scarborough Project – Nearshore Component
Proponent name	Woodside Energy Ltd
Ministerial Statement number	Ministerial Statement 1172
Purpose of the EMP	Provide management actions to minimise impacts to social, cultural, heritage and archaeological values in accordance with the outcomes of Condition 7 of Ministerial Statement 1172
Key environmental factor/s, outcome/s and/or objectives	The key environmental factor for this plan is Social Surroundings. The environmental objectives for Social Surroundings are: • Protect heritage places, sites and activities and habitats so that known or discovered heritage values are not impacted. • Condition 7-1 (1) of Ministerial Statement 1172: Minimise direct and indirect impacts to social, cultural, heritage and archaeological values within and surrounding the Development Envelope including from, but not limited to: (a) disturbance of the ground that may impact Aboriginal Heritage Site, 19675 Holden Point Quarry A and accompanying conservation zone (known as 'Tool Shed') registered under the Aboriginal Heritage Act 1972; (b) potential loss of access to areas to undertake traditional activities; (c) indirect impacts, including visual and dust impacts to social and cultural places and activities; and (d) disturbance of areas of volcanic rock in the sea bed.
Condition clauses	Condition 7 (refer to Table 2-3 for details)
Key components in the EMP (if applicable)	The structure of the CHMP is: • purpose and scope of the plan (Section 1) • the legislative framework governing this plan, including the conditions of approvals and permits, and other guidance and standards within (Section 2) • a description of the activity, including the relevant trenching, spoil disposal, borrow ground dredging, sand backfill, rock placement and construction activities method and rationale (Section 3) • a summary of consultation with Traditional Custodians undertaken on the plan, with issues raised by stakeholders carried into the impact assessment and management actions where appropriate (Section 4) • an assessment of heritage value and significance as description of the existing environment to provide a basis from which any potential impacts and risks can be quantified and assessed (Section 5) • impact assessment (Section 6) • the management actions that will be implemented to manage the potential impacts identified in Section 4 to an acceptable level (Section 7) • the implementation strategy, including inductions and training, reporting, roles and responsibilities, inspections and review requirements (Section 8).
Proposed construction commencement date	2023
EMP required pre-construction?	Yes ☑ No ☐

1 Introduction

1.1 Project overview

The Scarborough gas resource is located in the Carnarvon Basin, approximately 375 km west-north-west of the Burrup Peninsula in Western Australia. The Scarborough gas resource is part of the Greater Scarborough gas fields which include Thebe, Jupiter and Scarborough.

The relevant offshore petroleum titles are all located in Commonwealth waters. The Scarborough gas resource will be developed through a phased development drilling program, which will be tied back to a semi-submersible floating production unit moored in 950 m of water close to the Scarborough field.

The offshore facility will be connected by an approximately 430 km trunkline to a second LNG train (Pluto Train 2) to be constructed at the existing Pluto LNG onshore facility in Dampier, Western Australia (Figure 1-1). Woodside proposes to undertake seabed intervention and trunkline installation activities along the Scarborough trunkline route. Specific locations along the trunkline are referred to as kilometre points (KPs) throughout this Cultural Heritage Management Plan (CHMP). These references are indicative until final KPs are determined after Trunkline installation.

The Project, for the purposes of this CHMP, includes the associated activities in State waters as approved under Ministerial Statement 1172 – see Section 1.4 below.

1.2 Purpose

The purpose of this CHMP is to:

- comply with conditions of the Scarborough Nearshore Component Ministerial Statement 1172 as they relate to cultural heritage management, specifically Condition 7
- comply with the format requirements of an Aboriginal Cultural Heritage Management Plan under the Western Australian *Aboriginal Cultural Heritage Act 2021* in anticipation that any future changes to this plan may require approval or authorisation under that Act, and
- demonstrate how the activities described in Section 3 will be managed to reduce risks to an acceptable level, as per the *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans* (EPA, 2021)

1.3 Proponent

The proponent for the CHMP is Woodside Energy Ltd (Woodside) as operator of the Scarborough Project.

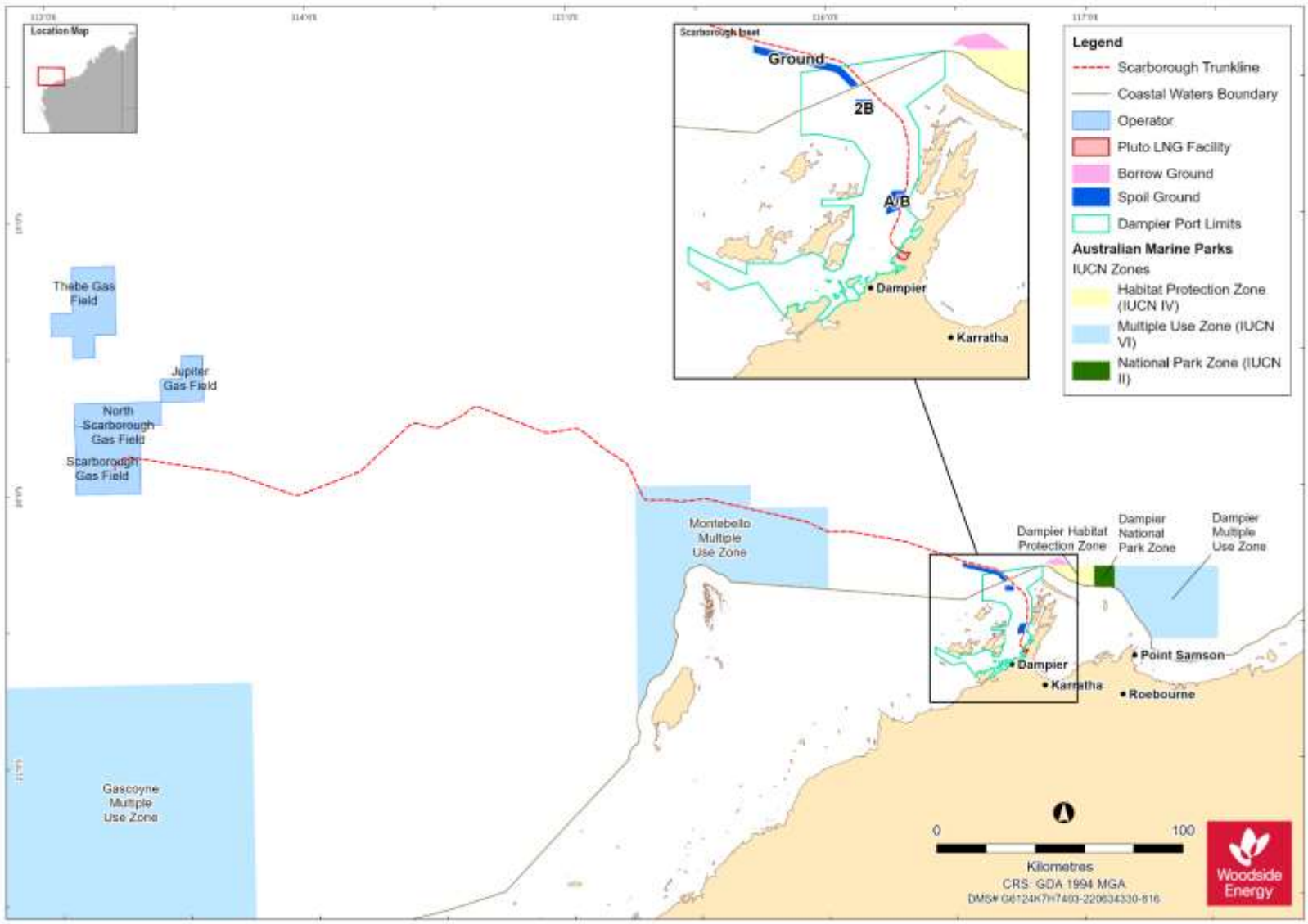

Figure 1-1: Location of the proposed development of Scarborough

1.4 Scope

This CHMP has been prepared to manage onshore and nearshore activities associated with the construction of the Project as set out in Section 3. This includes:

- Ground-disturbing site preparation and temporary works
- Onshore ground disturbing construction activities, including constructing a temporary rock groyne and installing a bedding layer in the trench
- Trailing suction hopper dredge (TSHD) trenching along sections of the trunkline route with material disposal at existing Spoil Ground 2B and Spoil Ground 5A (in Commonwealth waters, simply marked 'Ground' in Figure 1-1)
- Backhoe dredge (BHD) trenching along sections of the trunkline route with sediment placed in support split hopper barges (SHB) for disposal in Spoil Ground A/B (restricted to BHD activities) and Spoil Ground 2B
- Sand backfill along the trunkline by TSHD, with suitable material sourced from a borrow ground in Commonwealth waters
- Rock placement along the trunkline for pipeline protection/stabilisation
- Trunkline pre- and post-lay span rectification
- Contingent seabed intervention activities including maintenance dredging/excavation of resettled material in the trench prior to pipelay, post lay dredging, grout bags and rock placement
- Trunkline installation activities
- Shore crossing reinstatement.

Activities undertaken in Commonwealth waters, including borrow ground dredging, are outside the scope of this CHMP. These have been included in this CHMP for information only and at the request of MAC, to provide context for the broader dredging, spoil disposal and trunkline protection/ stabilisation activities.

If required, a further revision of this CHMP will be submitted for approval in accordance with Ministerial Statement 1172 where:

- ground disturbing activities as anticipated in condition 7-4 of Ministerial Statement 1172 are required beyond those identified in Section 3,
- construction activities addressed in Section 3 are required beyond the locations indicated in Figure 1-1 and Appendix A, or
- the CEO of the Department of Water and Environmental Regulation directs review and revision in accordance with Condition 7-8(2) of Ministerial Statement 1172.

1.5 Structure

The structure of this CHMP was designed in response to consultation with Traditional Custodian representatives, including MAC, and in particular to demonstrate the logical progression from an understanding of heritage significance through to the development of mitigations in accordance with the process set out in the Burra Charter (ICOMOS 2013). As such, this CHMP deviates from the template for Environmental Management Plans provided by the Environmental Protection Authority (EPA, 2021). The structure of this CHMP is:

- introduction, including Project overview and purpose and scope of the plan (Section 1)
- the legislative framework, regulatory requirements and national and international standards that inform this plan, including the conditions of the approvals and permits (Section 2)

- a description of Project activities including site preparation, dredging, spoil disposal, trunkline shore pull, trunkline installation, stabilisation and protection, span rectification, shore crossing reinstatement and contingent activities, as well as borrow ground activities not subject to this CHMP for completeness (Section 3)
- consultation with Traditional Custodians which informed the heritage values to be managed under this plan (Section 4)
- the heritage assessments and research undertaken to identify the heritage values in the Development Envelope, and the resulting understanding of heritage significance as a description of the existing environment. (Section 4)
- an impact assessment which identifies the potential impacts of the activities in Section 3 on the heritage values identified in Section 5 to inform the development of Management Actions (Section 6)
- the Management Actions and targets that will be implemented to manage the potential impacts and risks identified in Section 6 (Section 7)
- the implementation strategy, including inductions and training, reporting, roles and responsibilities, inspections and review requirements (Section 8).

2 Regulatory Framework

Multiple State and Federal Government laws apply to cultural heritage protection and management. Woodside is also party to agreements, the recipient of approvals and has internal standards of practice concerning cultural heritage management. Woodside has also made commitments to Traditional Custodians, including in this CHMP as an outcome of consultations, in relation to cultural heritage protection and management.

2.1 State Legislation

2.1.1 *Aboriginal Heritage Act 1972* and *Aboriginal Cultural Heritage Act 2021*

The State of Western Australia is in the process of transitioning from the *Aboriginal Heritage Act 1972* (AHA) to the *Aboriginal Cultural Heritage Act 2021* (ACHA).

The ACHA received royal assent in December 2021. This marked the start of a transition period, a staged process during which parts of the ACHA will become operational and parts of the AHA repealed over time. The date for completion of the transition will be set after regulations for the ACHA are finalised, expected in 2023.

The AHA was enacted to protect and preserve Aboriginal cultural heritage in Western Australia. Permission to disturb or destroy heritage sites could be authorised by ministerial consent under Section 18 of the AHA. Section 38 of the AHA establishes a register of Indigenous heritage. Information on this register is considered in Section 5.4.2.

The ACHA broadens the definition of Aboriginal cultural heritage to include intangible heritage and cultural landscapes, and requires the establishment of Local Aboriginal Cultural Heritage Services (LACHS) which are Aboriginal corporations responsible for approving Aboriginal cultural heritage permits or Aboriginal cultural heritage management plans. It is understood that the relevant LACHS for Murujuga will be MAC (Hansard, 2021), established under the Burrup and Maitland Industrial Estates Agreement.

During the transition period several elements of the AHA will be retained, including the Section 18 process with certain time limits (under Part 14 Division 2 Subdivision 3 of the ACHA), and the register of sites (under Section 331 and Part 9 of the ACHA).

The definition of heritage under Section 12 of the ACHA is already operational and is broader than under Sections 5 and 6 of the AHA, and includes intangible heritage and cultural landscapes which are included in the heritage values identified throughout Section 5 and summarised in Table 5-7.

The ACHA also establishes a hierarchy of heritage management requirements based expected levels of disturbance to cultural heritage from four tiers of activity. This is summarised in Table 2-1 below.

Table 2-1: Management requirements under the ACHA

Activity	Management Requirement
Exempt activity	None (Section 109)
Tier 1 activity (minimal disturbance)	Take all reasonable steps to avoid, or minimise, the risk of harm (Section 110(d))
Tier 2 activity (low disturbance)	Carry out the activity in accordance with an Aboriginal cultural heritage permit or Aboriginal cultural heritage management plan (Section 111(d))
Tier 3 activity (moderate to high disturbance)	Carry out the activity in accordance with an Aboriginal cultural heritage management plan (Section 112(d))

The tiers of activity are defined in Section 100 of the ACHA, however their operation is largely dependent on regulations and guidance still being drafted. This CHMP is intended to provide

confidence in compliance with the ACHA and future regulations by meeting the requirements of an Aboriginal cultural heritage management plan under the ACHA.

Table 2-2 summarises the requirements of an Aboriginal cultural heritage management plan under the ACHA, and where each of these requirements have been addressed in this CHMP.

Table 2-2: Compliance with requirements of an Aboriginal cultural heritage management plan

ACHA Reference	ACHA Requirement	CHMP Section
137(2)(a)(i)	Identify the proponent for the activity to which the plan relates	Section 1.3
137(2)(a)(ii)	identify the Aboriginal party to the plan	Section 4.1
137(2)(a)(iii)	Identify the area to which the plan relates	Figure 1-1 Appendix A
137(2)(a)(iv)	Identify the activity to which the plan relates	Section 1.1 Section 3
137(2)(b)(i)	identify the Aboriginal cultural heritage located in the area to which the plan relates	Section 5
137(2)(b)(ii)	identify the characteristics of that Aboriginal cultural heritage of which the proponent is aware	Section 5
137(2)(c)	include an Aboriginal cultural heritage impact statement in respect of the proposed activity	Section 6
137(2)(d)	set out the processes to be followed if, while approval or authorisation of the plan is of effect, a party to the plan becomes aware of new information about Aboriginal cultural heritage in the area to which the plan relates	Section 8.4
137(2)(e)	set out how the proposed activity will be managed, where possible, to avoid, or minimise, the risk of harm being caused to Aboriginal cultural heritage by the activity, including a clear explanation of the steps, if any, that will be taken to avoid, or minimise, that risk	Section 7
137(2)(f)	set out the extent to which harm to Aboriginal cultural heritage is authorised	Table 7-1
137(2)(g)	set out any conditions that must be complied with before, during and after the proposed activity is carried out	Table 7-1
137(2)(h)	specify the period for which the plan is to have effect	Section 1.4

2.1.2 *Environmental Protection Act 1986*

Significant proposals in Western Australia require assessment and approval under the *Environmental Protection Act 1986* (EP Act). Assessment is undertaken by the Environmental Protection Authority (EPA). Social Surroundings is an Environmental Factor that may require assessment by the EPA, where there is 'a clear link between a proposal or scheme's impact on the physical or biological surroundings and the subsequent impact on a person's aesthetic, ***cultural***, economic or social surroundings' (EPA 2016, emphasis added). Relevant approvals obtained by the Project under the EP Act are set out in Section 2.3.2 below.

2.1.3 *Heritage Act 2018*

Heritage protection may be afforded to some sites under the *Heritage Act 2018* (Heritage Act) by inclusion on the State Register of Heritage Places. It is an offence under Section 129 of the Heritage Act to alter, damage, destroy or despoil any place on the State Register of Heritage Places or remove anything that will have a detrimental effect on the heritage significance of that place without authorisation. Places included on the State Register of Heritage Places may be subject to orders of the Minister for Heritage under Part 4 of the Heritage Act, including stop work orders under Section 56(1) and repair orders under Section 65(1). Contravention of these orders is an offence under Section 130.

Information on the State Register of Heritage Places is considered in Section 5.4.3.

2.1.4 *Maritime Archaeology Act 1973*

The *Maritime Archaeology Act 1973* prescribes penalties in Section 8 for damage to maritime archaeological sites vested in the WA Museum without or in contravention of consent of the Museum Trustees. Under Section 4, maritime archaeological sites may include historic ships (i.e. ships lost before 1900), relics associated with historic ships and other places associated with a historic ship. Protected zones may also be declared under Section 9 by the Governor, imposing conditions which may include controlling vessel access, mooring, diving or "other underwater activity".

A review of known maritime archaeological sites is considered in Section 5.4.4 and potential impacts to maritime archaeological sites protected under this Act is considered throughout this CHMP.

2.2 Commonwealth Legislation

2.2.1 *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHPA) seeks 'to preserve and protect places, areas and objects of particular significance' to Aboriginal people. Under the Section 9 and 10 provisions of the ATSIHPA, the Minister for the Environment may declare significant Aboriginal areas temporarily or permanently protected if they are considered under threat. Similar declarations regarding Aboriginal objects can be made under Section 12.

Under Section 22 of the ATSIHPA, the contravention of any of these declarations is an offence. Additionally, the discovery of any Aboriginal remains must be reported to the Minister under Section 20.

2.2.2 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects Matters of National Environmental Significance (MNES) including National Heritage Listed and World Heritage Listed places. Any action that will have or is likely to have a significant impact on the heritage values of these places are offences under Part 3, Division 1 of the EPBC Act unless the action is permitted under one of the mechanisms of the EPBC Act.

In December 2018 Woodside submitted a referral and supplementary report for and to the former Department of Environment and Energy (DoEE), now the Department of Climate Change, Energy, the Environment and Water (DCCEEW), under the EPBC Act. The DoEE determined the Project was not a controlled action if undertaken in particular manner on 12 August 2019.

2.2.3 *Underwater Cultural Heritage Act 2018*

The *Underwater Cultural Heritage Act 2018* (UCHA) prescribes penalties for damage to protected underwater cultural heritage without a permit under Section 30 or in contravention of a permit under Section 28. Protected underwater cultural heritage is prescribed in Section 16 to automatically include the remains and associated artefacts of any vessel or aircraft that has been in Australian waters for 75 years, whether known or unknown. This protection is also extended to underwater cultural heritage in Commonwealth waters specified by the Environment Minister under Section 17.

Potential impacts to underwater cultural heritage protected under this Act are considered in Section 5.4.4. No Section 17 declarations to protect additional heritage have been made within the Development Envelope.

2.2.4 *Native Title Act 1993*

The *Native Title Act 1993* establishes processes to recognise and protect native title, and the rights afforded to native title holders and registered native title claimants in relation to third party land

use. addresses native title rights and interests, which may include rights and interests in heritage. This Act does not apply where native title has not been determined to exist, including over the Development Envelope. The existence of native title is considered in the identification of Traditional Custodians in Section 4.1

2.3 Relevant Approvals

2.3.1 AHA and ACHA Approvals

In 2006 and 2007 Woodside was granted two ministerial consents to disturb heritage with conditions under the Section 18 provisions of the AHA for the Pluto LNG Project. All proposed ground disturbance works for the Scarborough Project will occur within the previously disturbed Pluto LNG footprint subject to these consents. No further disturbance to heritage under these consents is anticipated by the Project. No additional Section 18 consents under the AHA, Aboriginal cultural heritage permits or Aboriginal cultural heritage management plans under the ACHA are required or sought for the Scarborough Project.

2.3.2 EP Act and EPBC Act Approvals

In December 2018, Woodside submitted a referral and supplementary report for assessment by the EPA in accordance with Part IV (section 38) of the EP Act *(Assessment no. 2194)*, and to the DoEE under the EPBC Act.

The DoEE determined the Project was not a controlled action if undertaken in particular manner which related to ecological protections (reference number 2018/8362) on 12 August 2019. The EPA decided to assess the Project based on the referral information and additional information. The Minister for Environment approved the Project under Ministerial Statement 1172 on 11 August 2021. Table 2-3 sets out the CHMP requirements as per Condition 7 of Ministerial Statement 1172, and where each of these requirements have been addressed in this CHMP.

Table 2-3: Compliance with Requirements of Ministerial Statement 1172 Condition 7 Cultural Heritage Management Plan

Clause	Clause details	CHMP section
7-1	The proponent must implement the proposal to meet the following objective:	
7-1(1)	Minimise direct and indirect impacts to social, cultural, heritage and archaeological values within and surrounding the Development Envelope, including from, but not limited to:	Section 7
7-1(1) – a	disturbance of the ground that may impact Aboriginal Heritage Site, 19675 Holden Point Quarry A and accompanying conservation zone (known as 'Tool Shed') registered under the *Aboriginal Heritage Act 1972*;	
7-1(1) –b	potential loss of access to areas to undertake traditional activities;	
7-1(1) –c	indirect impacts, including visual and dust impacts to social and cultural places and activities; and	
7-1(1) –d	disturbance of areas of volcanic rock in the sea bed.	
7-2	Prior to ground disturbing activities, the proponent shall finalise and submit a further version of the Cultural Heritage Management Plan (SA0006GH1401311448, Rev A, November 2019), in consultation with the Murujuga Aboriginal Corporation, to meet the objective specified in condition 7-1.	This plan Section 4
7-3	The Cultural Heritage Management Plan required by condition 7-2 must:	
7-3(1)	specify the objective to be achieved, as specified in condition 7-1;	Executive Summary
7-3(2)	specify risk-based management actions that will be implemented to demonstrate compliance with the objective specified in condition 7-1;	Table 7-1
7-3(3)	specify measurable management target(s) to determine the effectiveness of the risk-based management actions;	Table 7-1

Clause	Clause details	CHMP section
7-3(4)	specify monitoring to measure the effectiveness of management actions against management targets;	Table 7-1
7-3(5)	specify a process for revision of management actions and changes to proposal activities, in the event that the management targets are not achieved. The process must include an investigation to determine the cause of the management target(s) not being met;	Section 8.4
7-3(6)	provide the format and timing to demonstrate that condition 7-1 has been met for the reporting period in the Compliance Assessment Report required by condition 4-6 including, but not limited to:	Section 8.3
7-3(6) – a	verification of the implementation of management actions; and	
7-3(6) – b	reporting on the effectiveness of management actions against management target(s); and	
7-3(7)	provide evidence of consultation required by condition 7-2 and the outcomes of this consultation.	Section 4
7-4	Ground disturbing activities may not commence until the proponent has received notice in writing from the CEO that the Cultural Heritage Management Plan satisfies the requirements of condition 7-3.	Noted
7-5	After receiving notice in writing from the CEO that the Cultural Heritage Management Plan satisfies the requirements of condition 7-3, the proponent must:	
7-5(1)	implement the provisions of the Cultural Heritage Management Plan; and	Noted
7-5(2)	continue to implement the Cultural Heritage Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated the objective specified in condition 7-1 has been met.	Noted
7-6	In the event that monitoring, tests, surveys or investigations indicate non-achievement of management target(s) specified in the Cultural Heritage Management Plan, the proponent must:	
7-6(1)	report the non-achievement in writing to the CEO within twenty-one (21) days of the non-achievement being identified;	Section 8.3.2
7-6(2)	investigate to determine the cause of the management target(s) not being achieved;	Section 8.3.2
7-6(3)	provide a report to the CEO within ninety (90) days of the non-achievement being reported as required by condition 7-6(1). The report must include:	Section 8.3.2
7-6(3) – a	cause of management target(s) being exceeded;	
7-6(3) – b	the findings of the investigation required by condition 7-6(2);	
7-6(3) – c	details of revised and/or additional management actions to be implemented to prevent non-achievement of the management target(s); and	
7-6(3) – d	relevant changes to proposal activities	
7-7	In the event that monitoring, tests, surveys or investigations indicate that one or more management action(s) specified in the Cultural Heritage Management Plan have not been implemented, the proponent must:	
7-7(1)	investigate to determine the cause of the management action(s) not being implemented;	Section 8.3.2
7-7(2)	investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to the failure to implement management action(s);	Section 8.3.2
7-7(3)	provide a report to the CEO within twenty-eight (28) days of the noncompliance being identified. The report must include:	Section 8.3.2
7-7(3) – a	cause for failure to implement management action(s);	
7-7(3) – b	the findings of the investigation required by condition 7-7(2);	
7-7(3) – c	relevant changes to proposal activities; and	

Clause	Clause details	CHMP section
7-7(3) – d	measures to prevent, control or abate the environmental harm which may have occurred.	
7-8	The proponent:	
7-8(1)	may review and revise the Cultural Heritage Management Plan; or	Noted
7-8(2)	must review and revise the Cultural Heritage Management Plan as and when directed by the CEO.	Noted
7-9	The proponent must implement the latest revision of the Cultural Heritage Management Plan required by condition 7-2, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 7-3.	Noted

The Environment Minister has been requested to issue a declaration under Section 10 of the ATSIHPA regarding all industry on Murujuga (Burrup Peninsula). Assessment of this request is ongoing; any declaration or conditions resulting from this application are not addressed within this CHMP.

2.4 National and International Standards

2.4.1 *Charter for the Protection and Management of the Archaeological Heritage*

The *Charter for the Protection and Management of the Archaeological Heritage* sets out the standards expected for the preservation of archaeological sites. Of particular relevance, Article 2 requires that protection of Indigenous heritage involve the participation of traditional knowledge holders, and Article 4 requires protection of all archaeological heritage to be informed by survey. These articles are reflected in Woodside's Indigenous Communities Policy (Woodside 2021) which documents Woodside's commitment to "Ensuring our management of cultural heritage is thorough, transparent and underpinned by consultation and continued engagement with Indigenous communities."

Heritage surveys and other studies have been conducted over the Development Envelope, including archaeological and ethnographic surveys undertaken by Traditional Custodians for the Pluto LNG Project (including over the area in which the Scarborough shore crossing/onshore component will be constructed), ethnographic surveys of potential submerged heritage values and landscapes, and archaeological assessment of the submerged landscape based on bathymetry, geophysical survey and radiometric dating. All surveys undertaken for the Scarborough Project work were either led by or conducted with the involvement of Traditional Custodians. Further discussion on these surveys and studies is set out in Section 5.5.

Woodside has also consulted with representatives of Traditional Custodians on the development of this CHMP and its proposed mitigations (Section 4).

2.4.2 *Convention on the Protection of the Underwater Cultural Heritage*

The *Convention on the Protection of the Underwater Cultural Heritage* (UCH Convention) sets out obligations on its signatory states. Australia is not a signatory to the UCH Convention, but the UCHA was designed with the UCH Convention in mind to simplify possible future ratification. Woodside's obligations under the UCHA are discussed in Section 2.2.3.

Although the UCH Convention is not in force in Australia and does not directly impose obligations on industry, it can inform Woodside's management of underwater cultural heritage. For example, Article 5 advocates for measures to "prevent or mitigate any adverse effects that might arise from activities… incidentally affecting underwater cultural heritage" and the Annex of the UCH Convention sets out several Rules for archaeological work that can be adapted to the Scarborough Project as follows:

- From Rule 1, that protection of underwater cultural heritage through *in situ* preservation must be considered as the first option;

- From Rule 3, that impacts to heritage must be minimised and mitigated where possible;
- From Rule 4, that non-destructive construction techniques must be used where possible, and removal/salvage of artefacts must only be used as a mitigation of last resort;
- From Rule 5, that disturbance of human remains and venerated/spiritually significant sites must be avoided where possible;
- From Rule 12, that mitigations and avoidance strategies be adaptive to new information (see Section 8.4);
- From Rule 14, that significance and impact assessments are undertaken ahead of the Project commencing (see Sections 5 and Section 6 respectively);
- From Rule 15, that archaeological studies include desktop research, landscape/site assessment and impact assessment (see Sections 5.5 and Section 6);
- From Rule 16, that non-intrusive pipe-lay techniques are utilised where possible;
- From Rule 17, that heritage mitigations are appropriately resourced; and
- From Rule 25, that this CHMP consider both immediate impacts from construction and long-term impacts to heritage sites.

These Rules provide guidance on the development of mitigations to ensure the Scarborough Project minimises its impacts on submerged heritage. Woodside has considered these rules in developing the mitigations for the Project in Section 7.2 of this plan, except where another part of this plan is indicated.

2.4.3 International Finance Corporation Performance Standards and Guidance Notes

International Finance Corporation (IFC) Performance Standard 7 concerns working with Indigenous Peoples and Standard 8 sets standards for cultural heritage protection and management. Irrespective of whether proponents are IFC clients, these performance standards provide guidance as to good cultural heritage management practice such as:

- Proponents working with Indigenous communities to identify cultural heritage values, assess potential impacts to them and to design and implement management measures to wherever possible protect and manage these values
- Avoiding adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not feasible, minimising, mitigating or compensating for such impacts
- Respecting and preserving the culture, knowledge and practices of Indigenous People
- Taking a broader view of cultural heritage including that ‘losses of non-replicable tangible cultural heritage is a loss of a public good, not just for the present generation, but for future generations’

2.4.4 Burra Charter

The Burra Charter sets out the standards and process for the management of cultural heritage in Australia. In particular, it stresses the importance of a values-based approach to heritage (see Section 5.2) which seeks to conserve the significance and context of heritage places as well as their material "fabric".

Table 2-4 sets out the steps of the process outlined in the Burra Charter and where each of these processes have been addressed in this plan.

Table 2-4: Burra Charter Process

Step		Section reference
1	Understand the Place	Section 5

2	Assess Cultural Significance	Section 5
3	Identify All Factors and Issues	Section 3 Section 6 Appendix B
4	Develop Policy	Section 7
5	Prepare a Management Plan	This plan
6	Implement the Management Plan	
7	Monitor the Results and Review the Plan	Section 8

Other key components of the Burra Charter include that relocation or salvage of heritage material should be used as a last resort (Article 9, Article 10) and that traditional knowledge holders should be involved in the management of heritage places (Article 12, Article 26.3).

Article 6.4 of the Burra Charter notes that this process is iterative and must continue to be applied throughout the lifecycle of projects.

2.4.5 Other National and International Standards or Guidelines

The *Australian Heritage Commission Ask First Guidelines* (Ask First Guidelines) and *Engage Early: Guidance for proponents on best practice Indigenous engagement for environmental assessments under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* set out standards and provide guidance on processes for ensuring consultation with cultural knowledge holders informs an understanding of Indigenous heritage. The Indigenous Heritage Management process outlined in the Ask First Guidelines provides nine steps for identifying and managing Indigenous heritage places. The information in this CHMP is a result of engagements undertaken in accordance with this process, including heritage surveys, ethnographic surveys and consultation with Traditional Custodians in relation to this CHMP.

Dhawura Ngilan: A vision for Aboriginal and Torres Strait Islander Heritage in Australia and the Best Practice Standards in Indigenous cultural heritage management and legislation (Dhawura Ngilan) is a vision and best practice standards prepared by the Heritage Chairs and Officials of Australia and New Zealand, previously known as the Standing Committee for the Heritage Ministers Ministerial Council from 1996 to 2001.

In summary, these two documents, the vision and best practice standards, provide a roadmap for improving approaches to Aboriginal and Torres Strait Islander heritage management in Australia. Both documents are the product of extensive consultation with Indigenous stakeholders and relevant peak advisory bodies.

These documents are helpful in assessing, planning for and implementing cultural heritage management measures because they seek:

- consideration of intangible values and connections between objects, places and living culture, not just tangible heritage objects;
- the involvement of and consultation with Indigenous people in cultural heritage management;
- the recognition of Indigenous heritage alongside other forms of heritage;
- the protection of Indigenous knowledge; and
- the recognition of the potential for heritage places to form part of a larger landscape, potentially across multiple traditional groups;

These considerations have shaped the scope of the heritage assessments conducted in Section 5.5, and this CHMP more broadly.

Dhawura Ngilan also advocates for protection of Culturally Significant Species. These are considered in the determination of heritage values in 5.7. Ecological protection of these species and their habitats is addressed outside of this CHMP through other Project environmental management plans. The management of intangible values, such as the cultural use of plants and animals, lies within the scope of this CHMP and is discussed in Section 5.

The *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) sets out obligations on its signatory states, which include Australia. Where UNDRIP principles are adopted into law, these are addressed by compliance with the relevant legislation in Sections 2.1 and 2.2. Beyond this, Woodside under its Indigenous Communities Policy is committed to "Being guided by the UN Declaration on the Rights of Indigenous Peoples". In applying this to heritage managed under this CHMP, Woodside notes the following articles of particular relevance:

- Article 8(2)(a), recognising the rights of Indigenous people to not be deprived of cultural values;
- Article 11(1), recognising the rights of Indigenous people to practise and revitalize their cultural traditions and customs, including the right to maintain, protect and develop the past, present and future manifestations of their cultures;
- Article 12, recognising the rights of Indigenous people to maintain, protect, and have access in privacy to their religious and cultural sites;
- Article 24, recognising the rights of Indigenous people to their traditional medicines and to maintain their health practices, including the conservation of their vital medicinal plants, animals and minerals; and
- Article 31, recognising the rights of Indigenous people to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions.

Woodside has considered these articles in assessing the impacts of the Project (see Section 6).

The *Convention for the Safeguarding of the Intangible Cultural Heritage* (ICH Convention) sets out obligations on its signatory states. Australia is not a signatory to the ICH Convention and the convention does not include articles that are easily adapted to guide industry. The ICH Convention does, however, highlight the importance of protecting intangible heritage and assists in defining this term (refer Section 5.7).

The *Underwater Cultural Heritage Compliance Strategy* (UCH Strategy) prepared by the Department of Agriculture, Water and the Environment (DAWE, now DCCEEW) sets out the Australia Government's approach to enforcing the UCHA and includes useful context for defining impacts to underwater cultural heritage. As with the UCHA, this document is primarily concerned with shipwrecks, aircraft and maritime archaeology but can apply more broadly to Indigenous cultural heritage.

The UCH Strategy states that "[t]he protection of underwater cultural heritage sites includes the natural environment that immediately surrounds them and the archaeological context, such as the positions of artefacts located within the site." It also describes breaches as "[d]amage, disturbance and looting of underwater cultural heritage sites" and "un-authorised entry or activities in protected zones". Impacts to cultural landscapes are considered throughout this CHMP, and the Management Actions to protect these cultural landscapes are tabled in Section 7.

3 Description of the Activity

The following activities are permitted and managed under this CHMP:

1. Site preparation
2. Dredging
3. Spoil disposal
4. Trunkline shore pull
5. Trunkline installation
6. Stabilisation and protection
7. Borrow ground dredging
8. Span rectification
9. Shore crossing reinstatement.
10. Contingent activities

The following ancillary activities are permitted but not managed under the CHMP:

- Refuelling (onshore or vessels)
- Support vessel or helicopter activities (including loading, back-loading, pipe supply and crew transfer)
- Remotely operated vehicle (ROV) operations and other non-intrusive sub-sea observation/survey techniques
- Rock quarrying, transport, stockpiling and loadout to a vessel or barge
- Trunkline pre-commissioning, including cleaning and gauging pigging
- Trunkline dewatering and flooding, cleaning, gauge and treatment (FCGT)
- Retrieval of lost buoyancy tanks and other debris
- Wet buckle response
- Sediment and water quality impacts from overflow, wash-water discharge, chemical spill etc.

The management actions and marine orders in place to prevent ecological impacts for these activities are considered sufficient to avoid impacts to heritage. In the event that the management actions related to these activities are found to have not been implemented or to have not been adequate:

- assessment of potential heritage impacts will be considered in the resulting environmental investigation and reporting
- the matter will be reported in accordance with clauses 7-6 and 7-7 of Ministerial Statement 1172
- notification of this occurrence will be given to Murujuga Aboriginal Corporation as soon as reasonably possible.

3.1 Site Preparation

All Project onshore activities will be conducted on previously cleared land. No new ground will be cleared for the Project because the Onshore Project Area is entirely within land cleared for

Woodside's Pluto LNG Project. The pipeline construction method through the tidal zone is the same as was used for the Pluto trunkline and requires an open trench to pull the pipeline through.

3.1.1 Site Setup

Initial activities during the site preparation include:

- Set up of a traffic management, security gate, offices, amenities, laydown areas and a stockpile/receival area.
- Site works including dust protection for the heritage site, fence realignment and extension as required, installation of road safety barriers.
- Demarcation of the Pluto Pipeline and other live infrastructure.

Once the above is in place, further site works will commence, such as:

- Drainage system upgrades within previously disturbed land
- Make safe any underground services
- Establish foundations for temporary equipment and the wet buckle contingency spread
- Mobilise large earthmoving equipment.

Non-ground-disturbing site setup activities within previously disturbed land may be progressed prior to finalisation of this CHMP.

3.1.2 Onshore Excavation

Onshore trenching of the shore crossing will involve rock removal from the trench previously excavated during the Pluto Project construction, and in some areas increasing the trench depth up to the transition point between onshore trench construction and offshore trench construction as accessible from the mainland (approximately KP 0.1) using dry plant excavation equipment. A summary of the anticipated trenching methods follows (noting this methodology is subject to change depending on conditions encountered during Project construction):

- Using dry earth moving equipment, remove the rock revetment material placed within the previously excavated trench, and in some areas remove material from below the existing trench floor that is currently approximately 3m below the top of the revetment level.
- Where required, stabilise during excavation with low strength grout or concrete or stabilised sand along the slopes of the trench and in situ revetments.
- Drill and insert a Pluto site approved non-explosive expanding chemical product to locally break rock at base of onshore trench in a controlled manner.
- Breakout remaining rock to construct the trunkline trench alignment with excavator (potentially with rock breaker attachment).
- Re-grout any areas that have been dislodged or uncovered by the drilling and expansive agent use.

No blasting works will occur as part of these works.

A total volume of up to 6,500 m^3 of material is expected to be removed, mostly revetment. A long reach excavator will access the trunkline corridor to excavate the trench, which may be via a temporary rock groyne (refer to Section 3.1.4). Various gradings of rock material will be removed, including armour rock and rock fill. Some of the armour rock will be segregated and locally stockpiled to allow reuse. The remainder will be disposed offsite.

Some excavation may also be conducted by a Backhoe Dredge (BHD), overlapping with the long reach excavator in the tidal zone. A BHD is a hydraulic excavator installed on a pontoon with a spud system (legs positioned on the sea floor) to control positioning and stability. It uses a bucket

mounted on an arm that is hydraulically operated. The BHD is mainly used for dredging in shallow or confined waters (see Section 3.2.1).

3.1.3 Installation of Bedding Material

Following excavation of the trench, imported bedding material will be installed to reduce the risk of damage to the trunkline coating during the shore pull. The bedding layer material will be delivered to the long reach excavator by a front-end loader supported with a spread of dumper trucks collecting the imported material from the temporary storage area.

3.1.4 Temporary Groyne

A temporary groyne around 30 m long may be constructed from the shoreline, between the trunkline trench and the Pluto LNG Jetty. This allows excavating equipment to access and excavate the rock berm currently covering the existing trench through the tidal zone.

The groyne will be constructed mainly from existing rock material recovered from within the trunkline battery limits. The groyne will be designed to include heavy armour (coarse / large rock material) to protect it during weather events and will be periodically maintained to ensure it remains in serviceable condition. Following trunkline installation and subsequent backfill of the trench, the groyne will be removed.

3.1.5 Installation of Shore Pull Equipment

Temporary shore pull equipment will be installed within the Onshore Project Area to pull the Scarborough trunkline onshore, from the Shallow Water Lay Barge (SWLB). A typical shore pull spread includes:

- linear winch
- spool winch
- hold back anchors to support the winches
- control cabins for linear and spool winches
- power units for linear and spool winches
- generator
- cooling System.

A shore pull wire will be installed and deployed to approximately KP 0.8, where it will be connected to the shore pull head of the pipe string. The shore pull operation is described in Section 3.4.

Once the shore pull is completed, the winch and ancillary equipment will be dismantled. to allow for connections to the shore pull head to be conducted.

3.1.6 Other Onshore activities

Civil works may be required in the shore crossing location within the Pluto Gas Plant to facilitate installation and maintenance of a wet buckle contingency spread, which would only become operational in the case of an emergency.

Civil works may be required in the shore crossing location within the Pluto Gas Plant to facilitate set-up and operation of the FCGT spread, which may be performed if additional pipeline integrity testing is directed. This is not the base case for the project.

Both of the above activities, if necessary, will require water winning lines to be installed at the shore crossing location. These lines will be located within the previously cleared area and bring seawater onshore through filter systems, chemical treatment and booster pumps for injection into the trunkline. In the case of FCGT these pumps will fill the trunkline with treated water and then lower volume, high pressure pumps will be used to pressurise the trunkline to test pressure. The

FCGT spread will require diesel to be supplied from bunded tanks within the shore crossing location. Chemicals used for seawater treatment will also be held at the shore crossing location.

3.2 Dredging

The pre-lay works associated with installing the export trunkline involve dredging a 2 m to 4.3 m deep trench with an average width of approximately 30 m at seabed level along the export trunkline route.

Strict environmental conditions apply to all dredging operations. These conditions are set out in the relevant environmental approvals supporting the activities. The environmental conditions are not duplicated in this CHMP.

Hard rock sections of the proposed trunkline route across the North West Shelf Project shipping channel and the shore crossing were previously dredged with a cutter suction dredge as part of the construction of Pluto LNG Project. No nearshore blasting or cutter suction dredge works are required for the Project. However, it is likely some cleanout of the pre-existing trench may be required, including removing rock and backfilled materials.

Dredging will be performed by a trailing suction hopper dredge (TSHD) and BHD, which will be supported by hydrographic survey vessels, crew change vessels and general support tugs.

Planned allocation of TSHD and BHD is shown in Table 3-1 and Figure 3-1 for the various kilometre points (KPs) from shore. The split between TSHD and BHD is based on available geotechnical data and access restrictions and may have minor changes due to as found ground conditions. The spoil ground allocation is subject to consultation with Pilbara Ports Authority and other regulators.

Table 3-1: Indicative Trunkline pre-lay activities[1]

Section	Vessel types – pre-lay works	Disposal Location
Kilometre point (KP)0 to KP0.1*	Excavation: BHD; land based long reach excavator	Onshore
KP0.072* to KP0.8	TSHD, BHD and SHB	A/B
KP0.8 to KP6.0	BHD and SHB, TSHD	BHD to A/B; TSHD to 2B
KP6.0 to KP11.2	No dredging	No disposal
KP11.2 to KP18.4	TSHD	2B
KP18.4 to KP19.4	No dredging	No disposal
KP19.4 to KP21.3	TSHD	2B
KP21.3 to KP23.1	No dredging	No disposal
KP23.1 to KP23.9	TSHD	2B
KP23.9 to KP24.6	No dredging	No disposal
KP24.6 to KP32.0	TSHD	2B
KP32.0 to KP38.2	TSHD	5A (‘Ground’ in Figure 3-1)
KP38.2 to KP50.3**	TSHD	5A (‘Ground’ in Figure 3-1)

*Overlap between KP0.072 and KP0.1 allows flexibility in vessel type.
**Contingency only

[1] These activities are subject to refinement during design and execution. Bed levelling may also be used through-out the program to reach the desired sediment profiles.

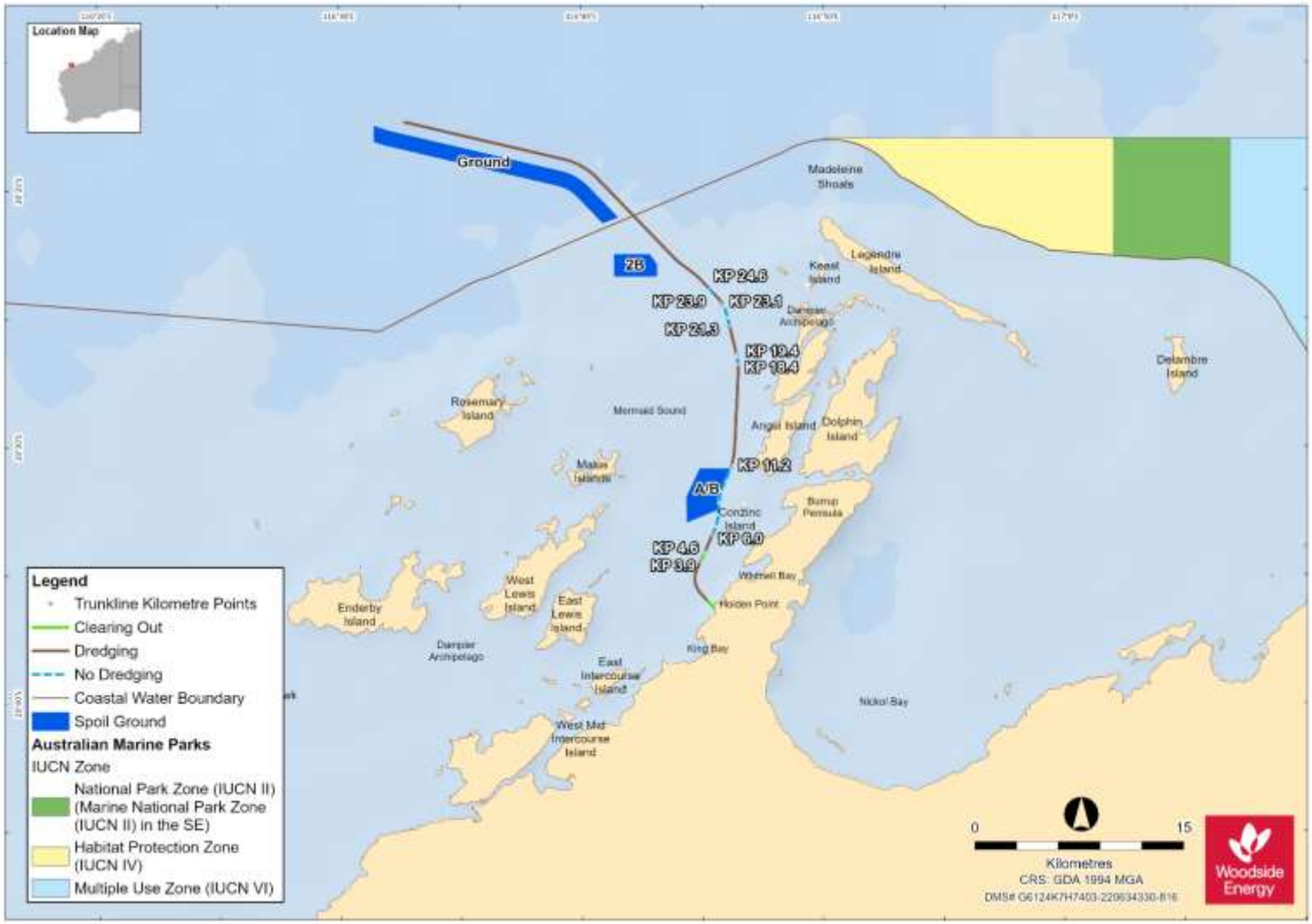

Figure 3-1: Proposed dredging activities showing the indicative pipeline kilometre points and locations of the existing spoil grounds (AB, 2B and 5A 'Ground')

3.2.1 Backhoe dredge and associated split hopper barge

BHD will be used for trenching in shallow nearshore waters, starting from the transition point between onshore trench construction, through to approximately KP 0.8, and supporting the TSHD up to around KP 6.0.

A BHD is a hydraulic excavator installed on a pontoon with a spud system to control the positioning and stability of the equipment. It uses a bucket mounted on an arm that is hydraulically operated. The BHD is mainly used for dredging in shallow or confined waters. It is especially suitable for working in narrow areas and in the near presence of obstacles, such as jetties, quay walls and pipelines. The BHD will manoeuvre itself using three spud legs and if required can use support tugs for longer distances.

The existing Pluto trunkline is located in proximity to the proposed Scarborough trunkline to be constructed for this Project. This minimises the impacts to the undisturbed seabed by overlapping planned and historic impacts where possible. The material encountered while dredging the Pluto trenches during the construction of the Pluto LNG Project was predominantly calcareous marine sediments and clays. Previous experience on Pluto showed no difficulties with equipment employed for dredging, thus similar equipment is proposed for the Project.

The Pluto trunkline has an exclusion zone in which the seabed may not be disturbed by any marine spread. This exclusion zone will be programmed in the positioning software and will be avoided during BHD activities.

The BHD will place dredged material into independent split hopper barges (SHB). The proposed SHBs will be self-propelled, towed or pushed by tugs and positioned alongside the BHD. Once safely secured, the SHB is loaded by the BHD. Fully loaded, the SHB will sail to the designated dredge disposal areas and discharge its load. To ensure a continuous dredging process a minimum number of two SHBs will be employed.

3.2.2 Trailing suction hopper dredge

Trailing Suction Hopper Dredge (TSHD) will also be used. This is a self-propelled ship with a holding facility (‘hopper’) and suction pipe(s) connected to drag head(s). For trench dredging only one suction pipe is in use at any one time. Once near the trenching area the TSHD will be positioned along the centreline of the trench. The TSHD will then lower its trailing pipe and drag head to the seabed. The TSHD will sail slowly forward (typically 1-1.5 m/s) while dragging the drag head along the seabed. A jet system is typically used to assist with fluidising the seabed material whilst the drag head teeth provide some cutting/loosening influence. The dredge pumps hydraulically lift a mixture of solids and water up the suction pipe and into the hopper.

The loading of the TSHD will be optimised using overflow. Overflow is the release of predominantly water with some fine sediment and is used to maximise the quantity of sediment within the hopper and substantially reduce the duration of the dredging campaign. Overflow will be discharged at the keel level, below the surface of the water, to reduce turbidity and dispersal of fine sediments.

Once loaded, the TSHD sails to the nominated spoil ground and disposes dredged material into existing approved dredge spoil grounds. TSHD will position itself before the hopper doors are opened to release the sediment within the area.

3.3 Spoil Disposal

Dredged material will be placed in an approved spoil ground area in accordance with an approved Sea Dumping Permit (SD2019-3982). Spoil Ground 2B and Spoil Ground A/B are the nominated spoil grounds in State waters, which lie nearby to the Trunkline Indicative Footprint Corridor.

Spoil Ground A/B will only be used to dispose of dredge material from BHD operations in the nearshore section of the trunkline trench and shore approach. It is located in Mermaid Sound on the western side of the Trunkline Indicative Footprint Corridor, between KP8 and KP11. Spoil

Ground 2B is located outside the mouth of Mermaid Sound, on the western side of the Trunkline Indicative Footprint Corridor between KP28 and KP30.

Dredge spoil will be released to the spoil grounds from the SHB's or TSHD via the bottom doors. The SHB/TSHD will be accurately positioned above a specific disposal point to discharge the dredged material in designated areas. Discharge will be controlled to ensure distribution and gradual build-up of the material within the disposal area. The disposal location of each load will be logged and recorded. Regular progress surveys will be undertaken to ensure all vessels are provided with accurate bathymetric data.

Spoil Ground A/B is located in Mermaid Sound on the western side of the Trunkline Indicative Footprint Corridor, between KP8 and KP11 as shown in Figure 3-1 and described in Table 3-2. Spoil Ground A/B was initially established in 1986 by Woodside. This spoil ground has subsequently been used for disposing of maintenance dredging material. The spoil ground has been used by Woodside, Pilbara Ports Authority (PPA) and Rio Tinto.

Disposal operations will be limited to the disposal of sediments dredged using the BHD at Spoil Ground A/B. Sediments dredged using a backhoe dredger remain more consolidated than those dredged using a TSHD, which limits the quantity of fines mobilised into the water column during disposal.

Spoil Ground 2B is located outside the mouth of Mermaid Sound, on the western side of the Trunkline Indicative Footprint Corridor between KP28 and KP30 as shown in Figure 3-1 and described in Table 3-2. Spoil Ground 2B was developed for the capital dredging activities associated with Woodside's Pluto LNG Project. The Pluto LNG Project has been the sole user of Spoil Ground 2B to date.

Spoil Ground 5A is the nominated spoil ground in Commonwealth waters, which lies within the Trunkline Indicative Footprint Corridor as shown in Figure 3-1 and described in Table 3-2. Spoil Ground 5A is approximately 300 m wide and runs for about 18 km between the State waters boundary and KP50. This Spoil Ground was developed for dredging activities associated with the Woodside Pluto LNG Project and has capacity to accommodate dredge volumes from Scarborough.

Sediment from the TSHD will be released at the nominated spoil ground by opening the hopper doors. Sediment collected by the TSHD from KP0 up to KP23.8 will be disposed at spoil ground 2B and sediment collected between KP38.2 and KP50.3 will be disposed at spoil ground 5A. Sediment collected by the TSHD between KP24.5 and KP38.2 may be disposed at either of these locations.

Table 3-2: Coordinates of proposed spoil grounds (datum WGS 84)

Spoil Ground	Latitude	Longitude
Spoil Ground A/B	20° 30.912' S	116° 44.898' E
	20° 30.912' S	116° 46.104' E
	20° 31.998' S	116° 45.576' E
	20° 31.998' S	116° 44.358' E
	20° 32.491' S	116° 45.573' E
	20° 32.963' S	116° 44.368' E
Spoil Ground 2B	20° 22.556' S	116° 41.380' E
	20° 22.558' S	116° 42.817' E
	20° 22.938' S	116° 43.104' E
	20° 23.372' S	116° 43.103' E
	20° 23.369' S	116° 41.378' E

Spoil Ground	Latitude	Longitude
Spoil Ground 5A	20° 18.006' S	116° 32.584' E
	20° 17.848' S	116° 32.624' E
	20° 19.306' S	116° 39.158' E
	20° 19.550' S	116° 39.756' E
	20° 19.913' S	116° 40.286' E
	20° 21.086' S	116° 41.483' E
	20° 21.142' S	116° 41.321' E
	20° 20.016' S	116° 40.172' E
	20° 19.691' S	116° 39.669' E
	20° 19.464' S	116° 39.118' E

3.4 Trunkline Shore Pull

The proposed construction method for the Scarborough trunkline shore crossing is a shore pull from the Shallow Water Lay Barge (SWLB) through the pre-dredged trench. The hold-back anchor and winch installed during shore crossing site preparation will be used to pull the pipe from the lay barge.

Prior to the arrival of the SWLB on site, the shore pull wire will be installed and deployed to approximately KP 0.8 and buoyed for easy recovery by the SWLB. The pull wire will be unspooled from onshore and towed to the target KP by a suitable installation vessel.

Upon arrival at the shore pull location, the SWLB will recover the marker buoy along with the pull wire, which will be connected to the shore pull head at the start of the pipe string.

The shore pull will be performed by the onshore linear winch in coordination with the SWLB and will be completed when the shore pull head with the pipe section reaches the onshore target point. When the pipeline pulling operation is completed, the linear winch will keep the tension on the pull wire and the SWLB will then start laying pipe away from the shore. After the pipeline has been pulled into its final position, all the installed buoyancy tanks will be removed from the pipeline and pulling head. Survey activities will be undertaken to confirm the position of the pipeline in the trench.

3.5 Trunkline Installation

The trunkline is dual diameter. The trunkline diameter within state waters out to ~KP 200 (approximately adjacent to the Pluto platform) is 36”, and the remainder of the trunkline from ~KP 200 to the Floating Product Unit (FPU), approximately 400 km in Commonwealth waters, is 32” in diameter.

The key routing drivers for the trunkline are:

- minimising environmental and cultural impact
- avoiding any identified geohazards
- finding an optimum route up the continental slope (1,000 m to 300 m water depth) which minimises intervention requirements and long-term integrity issues
- minimising the number of third-party trunkline crossings.

The nearshore section of the trunkline will be installed by a Shallow Water Lay Barge (SWLB). The SWLB constructs the trunkline by welding together nominal 12m lengths of pipe and laying them to

the seabed over the ‘stinger’, which supports the trunkline as it transitions from the SWLB to the seabed. As the pipe sections are 12m long, the SWLB moves forward 12m intervals.

Anchoring will be required to position the SWLB in the nearshore area. The SWLB typically uses an eight or ten-point anchor mooring spread for station-keeping as it lays the pipe along the trunkline route in State waters. The mooring system consists of a suitable anchor, with chain linked to the working length of high strength synthetic rope (HSSR) or steel wire. Mooring design is conducted to determine appropriate anchor selections, anchor positioning and associated lines.

The SWLB is expected to travel around 300 to 350 m of the pipeline route on one mooring spread before the anchors are re-set to the next location. Anchor spreads will be set within the maximum 1,500 m corridor (750 m on either side of the trunkline centreline). The closest position of the SWLB to shore will be around 750 m from shore (anchors will extend inwards towards the shore) and the SWLB will need to moor for the full extent of its use (potentially up to the State waters boundary). Assessments have been undertaken to reduce impact from anchors to exposed calcarenite sections within the trunkline corridor.

Anchor holding tests may be performed to ensure anchor requirements of the SWLB can be met. If an anchor is found to be dragging, the tension in the anchor wire will be released and remedial action in the form of redeployment and/or re-tensioning will be undertaken.

The SWLB will be assisted throughout pipelay operations by a spread of vessels comprising:

- two anchor handling tugs for mooring operations
- two shallow-water anchor handling tugs for mooring in shallow-water areas
- support vessel for monitoring of the touch down point of the pipeline
- two pipe supply vessels
- general supply vessel for the SWLB.

Once the pipelay has progressed to deeper waters (more than 30 m deep), the deep water pipelay vessel (PV) will install the trunkline. The PV will maintain position during pipelaying operations using its thrusters and dynamic positioning.

The PV allows for welding together multiple 12 m lengths of pipe prior to being welded to the previous section to form the trunkline. Upon completion of welding; inspections and repairs or amendments are carried out as required and field joint coating is applied, before the pipe is moved over a supporting “stinger” on the stern of the vessel, down to the seabed as the PV travels forward.

Once the final section of the trunkline is installed near the FPU location, the as-constructed pipeline will be surveyed by a dedicated vessel. The line will subsequently be preserved by inerting the full internal volume with nitrogen. If FCGT is required, this will occur first before the pipeline is fully cleaned and dried. The FCGT, drying and inerting activities will be supported from the shore crossing site.

3.6 Stabilisation and Protection

After the installation of the trunkline, backfilling is required to stabilise the trunkline. The trunkline will be stabilised through a combination of sand backfill and rock placement. Stabilisation is anticipated to be required in water depths shallower than 40 m, which corresponds to a location about 38 km offshore from the Onshore Project Area. Rock supply and quarrying will occur outside the Operational Area and is outside the scope of this CHMP.

The anticipated distribution of stabilisation methods is described in Table 3-3 and depicted in Figure 3-2. In field allocation of vessels for the work is subject to schedule and site conditions.

Table 3-3: Indicative Trunkline post-lay activities[2]

Section	Vessel types – post -lay works
Kilometre point (KP)0 to KP0.1	Land based long reach excavator (rock backfill)
KP0.072 to KP0.8	Rock backfill using a BHD or RIV to cover over the top of the pipe
KP0.8 to KP3.9	Sand backfill using a TSHD to cover over the top of the pipe
KP3.9 to KP4.6	Rock backfill using a RIV to cover over the top of the pipe
KP4.6 to KP6.0	Sand backfill using a TSHD to cover over the top of the pipe
KP6.0 to KP11.2	Rock berm to stabilise the trunkline using a RIV and BHD
KP11.2 to KP18.4	Sand backfill using a TSHD to cover over the top of the pipe
KP18.4 to KP19.4	Rock berm to stabilise the trunkline using a RIV
KP19.4 to KP21.3	Sand backfill using a TSHD to cover over the top of the pipe
KP21.3 to KP23.1	Rock berm to stabilise the trunkline using a RIV
KP23.1 to KP23.9	Sand backfill using a TSHD to cover over the top of the pipe
KP23.9 to KP24.6	Rock berm to stabilise the trunkline using a RIV
KP24.6 to KP32.0	Sand backfill using a TSHD to cover over the top of the pipe
KP32.0 to KP38.2	Sand backfill using a TSHD to cover over the top of the pipe
KP38.2 to KP50.3*	Sand backfill using a TSHD to cover over the top of the pipe

*Contingency only

3.6.1 Sand backfill

The TSHD will dredge material from the designated borrow area and transport the material to the required location at the pipeline. The borrow ground material is required to have a minimum coarseness to be considered suitable for backfilling purposes. Coarse graded sand is more stable and less likely to liquify in cyclonic conditions. During dredging at the borrow ground the material will be tested to ensure the minimum engineering requirements are being met.

Sand backfill will be placed over the trunkline via a drag head. The TSHD will reverse pump the sand backfill material from its hopper into the trench through a suction pipe such that material is released close to the seabed.

3.6.2 Rock placement

Rock placement will be required at the following locations:

- the shore crossing trench and area next to the Pluto export jetty and Pluto channel
- the Woodside channel crossing
- all areas where pipeline is laid directly on the seabed

Rock Installation along the LNG Jetty and some of the shallower areas along the trunkline will be undertaken by the BHD, positioned on spuds. The rock material will be provided to the BHD by a SHB or flat top barge, collecting the imported material. In areas further offshore where water depth allows, rock placement will be performed by a Rock Installation Vessel (RIV) set up for all gradings of rock material.

[2] These activities are subject to refinement during design and execution. Bed levelling may also be used through-out the program to reach the desired sediment profiles.

3.7 Borrow Ground Dredging

While Offshore Borrow Ground activities are outside the scope of this CHMP, a description of the activity is included for completeness and to give confidence that borrow ground activities will not occur in waters subject to Ministerial Statement MS 1172. Where sand backfill is used, the TSHD will dredge material from the Offshore Borrow Ground and transport the material to the required location at the pipeline. The Offshore Borrow Ground is within Commonwealth waters and is approximately 17 km^2, located 20 km to the east of the proposed trunkline route and adjacent to the Dampier Marine Park, although offset by a minimum of 250 m from the park boundaries. This is shown in Figure 3-2 below. Borrow ground dredging will be limited to marine sediments (i.e. will not impact the ancient land surface where people may have lived or travelled), as described in the commonwealth waters Scarborough Seabed Intervention and Trunkline Installation Environment Plan, available at https://info.nopsema.gov.au/environment_plans/575/show_public.

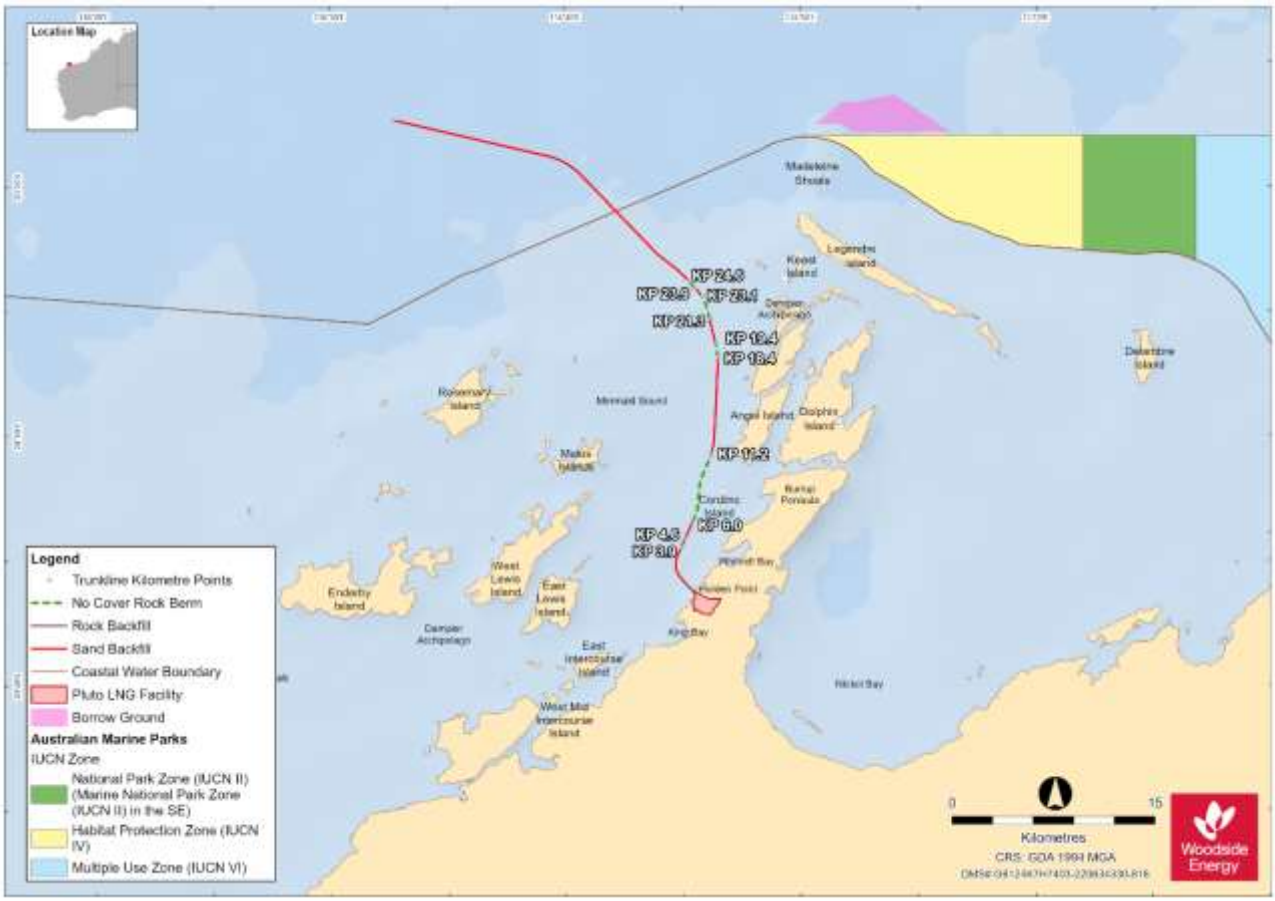

Figure 3-2: Proposed backfill activities showing the indicative pipeline kilometre points, the backfill material type, and the location of offshore borrow ground

3.8 Span Rectification

Pre-lay span rectification, the preparation of adequate support for the trunkline, is expected at several locations within State waters where the trunkline is modelled to have spans in excess of the allowable span length. The pre-lay span scope is a planned to be covered with a combination of methods depending on the specific requirements of the span location such as rock berms, the placement of concrete mattresses (typically 6 or 8 m x 3 m) and/or inflatable grout bags (typically 200 kg to 2000 kg).

All the span areas will subsequently be covered with rock material as part of the post-lay rock placement campaign.

3.9 Shore Crossing Reinstatement

Once the shore pull is completed, the winch and ancillary equipment will be dismantled to allow for connections to the shore pull head to be conducted. This includes removal of the hold back anchor to below ground level.

Post-lay onshore activities will be carried out within the Onshore Project Area and may include:

- Transportation of rock material from stockpile area to the shore crossing area
- Installation of shore line filter and armour rock protection over the trunkline
- Removal of the groyne (if constructed)
- Vibration monitoring fence re-instatement
- Supporting drying and inerting (introduction of nitrogen into the trunkline) and FCGT if required activities
- Site re-instatement, including removal of ancillary facilities, fences and barricades, road repairs, and reconstruction of lighting towers and other services.

3.10 Contingent activities

3.10.1 Seabed intervention

3.10.1.1 Span Rectification

The trunkline route has been engineered to reduce the requirement for span rectification. Following installation of the trunkline, locations requiring span rectification may be identified in addition to the design spans (see Section 3.8). The options for possible post-lay span correction and scour mitigation include grout bags, rock installation, seabed levelling and excavation (e.g., dredging using TSHD, mass flow excavators and jetting).

3.10.1.2 Maintenance of Trenches

In case pre-lay trenches silt up prior to pipelay, secondary dredging of settled material in trench may need to occur to reprofile the trench. This would be undertaken by the TSHD or BHD, with the associated dredged material placed in Spoil Ground 2B (for TSHD activities) or Spoil Ground A/B (for BHD activities).

3.10.1.3 Pre-lay Removal of Obstructions

In the event the pre-lay survey of the trunkline route identifies any obstructions that may impact the trunkline installation, these obstructions will be removed. If not performed by the BHD, this will be performed by a construction vessel using ROVs and heave compensated cranes.

3.10.1.4 Deburial

In case of faults (or suspected faults) found in the as-constructed trunkline, inspection and repair may be required that may involve exposing the trunkline. Methods considered for this work are typically mass flow excavation, jetting, grab systems or (partial) re-dredging with the TSHD. Sediment would be placed in the designated Spoil Ground 2B (in case of TSHD intervention) or remain close to the pipeline alignment (all other methods).

3.10.1.5 Remediation Work

Re-dredging or removing of misplaced sand backfill may be required in case spoil disposal occurred outside the spoil dump area or erroneous placement of rock material. A decision will be made in coordination with relevant stakeholders that additional intervention is the correct response. Remediation could take the form of application of a mass flow excavation attempting to move

material away from the offending position, use of a grab system to relocate or re-dredging with the TSHD.

3.10.2 Trunkline installation

3.10.2.1 Woodside Channel Crossing

The basis for the Project is for the SWLB to pipelay across the Woodside Channel during a pre-determined window in the LNG tanker shipping schedule. In the event this cannot be accommodated, the trunkline may be installed across the Woodside Channel through the execution of an on-bottom tow and above water tie-ins (AWTI). In this scenario, the trunkline will be pre-laid at the north side of the channel between about KP 4.7 and KP 5.75 and pulled across by the SWLB pulling a wire deployed inside the trench across the channel. Low profile buoyancy tanks will be used to ensure the stability of the pipe section.

A survey vessel will be used to monitor the on bottom pull. An ROV may also be used to visually inspect the pulling operation.

If a tanker requires passage through the Shipping Channel during the on bottom tow operation, the activity will cease. Following tanker passage over the pipe and docking, the shore pull activity will recommence.

3.10.2.2 Above Water Tie-ins

AWTIs will be performed to join sections of the trunkline that have been pre-laid. A pre-installation survey will be conducted before trunkline sections are lifted via cables connected to the pipeline by means of clamps fastened around the pipelines during the laying process. Hooks attached to the cables may be connected to the clamps by either divers or ROV. Once both sections of the pipeline are brought above water, the pipeline ends will be cut, tested, welded and coated.

The completed trunkline will then be lowered to the seabed and the cables will be disconnected and removed by divers or an ROV.

3.10.2.3 Trunkline Abandonment and Retrieval

The trunkline may need to be abandoned and recovered during the course of installation. These are pre-engineered and proceduralised activities. Abandonment is typically required when the sea state exceeds the approved limit for trunkline installation, or due to an issue with supply of pipe to the vessel, mechanical issues or approaching cyclones. Abandonment is performed by welding an abandonment head to the trunkline and carefully lowering the trunkline to the seabed. Recovery is the reverse of this operation. Abandonment needs to be performed in a straight line, therefore if an abandonment occurs at a bend in the trunkline route, lay-down on the seabed may move outside of the nominated average 30m wide trunkline corridor. It is important to note here that the length of trunkline to be abandoned to the seabed is nominally 2.5 times the water depth.

3.10.2.4 Temporary Mooring of Trunkline Installation Vessel

The PV may be required to temporarily moor on location via its anchor, in the case of a contingency scenario. Wherever possible, this will be done away from subsea assets to prevent damage. Under normal operations the PV operates under dynamic positioning.

3.10.2.5 Pipeline Pull Head Embedment

There is a possibility that the pipeline pull head will become embedded during the on-bottom pull operation. During the on-bottom pull, if pull forces show a rapid increase, the pull will be suspended and the pull-in head inspected by ROV. If the pull head gets embedded, it will be extracted via the use of an air lift device, or by releasing tension from the pulling winch and the SWLB pulling the pipe in the reverse direction.

3.10.2.6 Dead Man Anchor pipelay initiation

In the unlikely event that the nearshore section of the trunkline in State waters is not installed prior to the arrival of the PV, a Dead Man Anchor (DMA) will be used to initiate trunkline installation. This involves setting the DMA on the trunkline route with a long pennant wire connected to the first pipe of the trunkline in the PV. The DMA is required to provide tension (by the PV pulling on the DMA wire) as the trunkline is laid to the seabed. After a sufficient length of the trunkline has been installed the DMA and associated pennant wire will be recovered from the seabed.

3.11 Post-Construction Infrastructure

The long-term impacts of constructed infrastructure is also considered in Appendix B. No activities subject to this CHMP are involved in this phase of work. Possible impacts instead arise from the existence of infrastructure—for example limitations on access to heritage sites or scouring along the pipeline exposing buried heritage.

4 Consultation with Traditional Custodians

Cultural heritage is a key concern for the Aboriginal communities that host Woodside's operations, and Traditional Custodians have deep and long-lasting connection to cultural places and the broader landscape.

4.1 Identification of Traditional Custodians

Between 1994 and 1998, three competing native title claims were lodged over the onshore and nearshore components of Development Envelope. These claims were made by Ngarluma and Yindjibarndi, Mardudhunera and Yaburara and the Wong-Goo-Tt-Oo people (Claimants). No other historic or current Native Title claims overlap the Development Envelope.

Prior to the dismissal of these native title claims, the Western Australian Government signed the Burrup and Maitland Industrial Estates Agreement (BMIEA) in 2006 with the Claimants. The BMIEA established an Approved Body Corporate to represent the Claimants, which is MAC and represents the Ngarda Ngarli Traditional Custodians of Murujuga (The Ngarluma and Yindjibarndi, Mardudhunera and Yaburara and Wong-Goo-Tt-Oo people). MAC owns and co-manages the Murujuga National Park, has responsibilities to care for the National Heritage values of the Dampier Archipelago National Heritage Place and is progressing the World Heritage nomination of the Murujuga Cultural Landscape.

The determination of the competing Native Title claims resulted in no native title being found over Murujuga or below the low water mark. Native Title was determined for parts of the claims beyond Murujuga, with Registered Native Title Bodies Corporate for these claims including the Ngarluma Aboriginal Corporation, Yindjibarndi Aboriginal Corporation and the Wirrawandi Aboriginal Corporation which replaced the Yaburara and Coastal Mardudhunera Aboriginal Corporation.

Communication with the Yamatji Marlpa Aboriginal Corporation, as the Native Title Representative Body for the Pilbara region, confirmed that the appropriate Indigenous representatives for the Project are represented by MAC and Ngarluma Aboriginal Corporation, whose determined Native Title is closest to the Development Envelope.

Under the ACHA, Local Aboriginal Cultural Heritage Services (LACHS) will be appointed as the relevant authorities for decisions on heritage management. It is the intention of the Western Australian Government that MAC will be the LACHS for Murujuga (Hansard, 2021).

Consultation with Traditional Custodians, under UNDRIP (see Section 2.4.5), must be conducted through representative institutions such as these to ensure that community views are properly reflected and to avoid undermining traditional decision-making processes.

4.2 Preliminary Consultation

Traditional Custodians have been consulted on the Scarborough Project since April 2018, and on this CHMP since November 2019. This plan was designed to comply with Woodside's internal processes and Cultural Heritage Management Procedure and was intended primarily as internal documentation of obligations and responsibilities. As such, the early draft was a simpler, more streamlined document. Consultation on this document involved the Traditional Custodians of Murujuga (Burrup Peninsula) through a number of forums and representative bodies and occurred between April 2018 and December 2019 as summarised in Table 4-1.

Woodside's objectives for Traditional Custodian consultation while preparing the original CHMP were to:

- build Traditional Custodian awareness and understanding of the development of Scarborough,
- provide Traditional Custodians with opportunities to obtain information about the development of Scarborough, including the potential risks and impacts to cultural heritage

and the prevention and mitigation measures proposed to avoid or minimise those risks and impacts,

- gain feedback from Traditional Custodians about the development of Scarborough and the heritage values that would require protection, and
- identify management activities that Traditional Custodians supported or recommended for the protection of heritage values.

Table 4-1: Initial consultation with Traditional Custodians

Date	Activity	Stakeholders Involved	Summary of Engagement
26 April 2018	Quarterly Karratha heritage meeting	Ngarluma Aboriginal Corporation, Yindjibarndi Aboriginal Corporation, Yaburara and Coastal Mardudhunera Aboriginal Corporation, Wong-Goo-Tt-Oo People	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update about approvals pathways and schedule for several projects, including the Scarborough Project.
12 June 2018	Meeting	Murujuga Aboriginal Corporation	A briefing provided on the proposed Scarborough Project and other projects
6 September 2018	Quarterly Karratha heritage meeting	Ngarluma Aboriginal Corporation, Yindjibarndi Aboriginal Corporation, Yaburara and Coastal Mardudhunera Aboriginal Corporation, Wong-Goo-Tt-Oo People	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update about approvals pathways and schedule for projects, including the Scarborough Project.
11 September 2018	Meeting	Murujuga Aboriginal Corporation	A briefing provided on the proposed Scarborough Project and other projects.
29 November 2018	Quarterly Karratha heritage meeting	Ngarluma Aboriginal Corporation, Yaburara and Coastal Mardudhunera Aboriginal Corporation, Wong-Goo-Tt-Oo People	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update about approvals pathways and schedule for projects, including the Scarborough Project.
12 December 2018	Meeting	Murujuga Aboriginal Corporation	Provided an update about the proposed Scarborough Project, proposed shore crossing activities and discussion on future engagement and opportunities to work together.
24 December 2018	Email notification to stakeholders of State waters referral	Murujuga Aboriginal Corporation and others	Provided an update about the Scarborough Project and advice of the referral of activities in State waters to EPA and DoEE, and proposed submission of an Offshore Project Proposal to the National Offshore Petroleum Safety and Environmental Management Authority.
9 January 2019	Meeting	Murujuga Aboriginal Corporation	Ongoing engagement and progress update about the proposed Scarborough Project and other projects.
24 January 2019	Meeting	Murujuga Aboriginal Corporation	Ongoing engagement and progress update about the proposed Scarborough Project and other projects.
10 April 2019	Meeting	Murujuga Aboriginal Corporation	Discussion on preliminary social impacts and opportunities assessment for projects including the Scarborough Project.
1 May 2019	Submerged heritage assessment and ethnographic	Traditional Custodians and elders representing all five Traditional Custodian groups with interests in the Development Envelope (Mardudhunera, Ngarluma, Yaburara, Yindjibarndi and Wong-	Preliminary desktop assessment and ethnographic inspection and consultation with Traditional Custodians about the potential for submerged Aboriginal heritage in the Development Envelope. The consultation included both male and female informants and

Date	Activity	Stakeholders Involved	Summary of Engagement
	consultation	Goo-Tt-Oo) invited through Murujuga Aboriginal Corporation and other representative organisations.	was conducted by a male and female heritage consultant. Results are discussed in Section 5.5.2.
15 to 16 May 2019	Public information sessions in Karratha and Roebourne	Various Karratha and Roebourne community members	Broad engagement with Karratha and Roebourne community members on issues and opportunities relevant to project developments, particularly the proposed Scarborough Project. Cultural Heritage was a dedicated consultation topic, with subject matter experts available to discuss this.
6 June 2019	Quarterly Karratha heritage meeting	Attended by Ngarluma Aboriginal Corporation, Yaburara and Coastal Mardudhunera Aboriginal Corporation and Wong-Goo-Tt-Oo Aboriginal Corporation	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update about proposed Scarborough Project and environmental approvals, including expected public comment periods.
5 September 2019	Meeting	Murujuga Aboriginal Corporation	Woodside provided an overview of ethnographic fieldwork and desktop research conducted to inform heritage commitments, and the key elements of the Project that related to heritage as part of the public consultation on the Scarborough Dredging and Spoil Disposal Management Plan (DSDMP).
10 September 2019	Letter	Murujuga Aboriginal Corporation	MAC issued a letter to Woodside with formal comment on DSDMP (Revision 0) and request for meeting. Recommendation 2 of this letter highlighted the importance of submerged rock art and other cultural sites. Recommendation 11 supported Woodside's commitment for an assessment of the submerged landscape for heritage sites and requested this be prioritised as part of the approval process for the DSDMP. MAC also advised that they did not consider the DSDMP to fully address the protection of heritage values for the Project, including World Heritage significance. These values have been addressed in this CHMP.
11 October 2019	Email	Murujuga Aboriginal Corporation	Woodside provided written response to MAC's comments on the DSDMP raised in the letter dated 10 September 2019, including on heritage matters, along with a copy of the revised DSDMP (Revision 1) incorporating changes made in response to these comments.
15 October 2019	Meeting	Murujuga Aboriginal Corporation	Woodside met with MAC and discussed comments raised on DSDMP.
16 October 2019	Email	Murujuga Aboriginal Corporation	MAC emailed Woodside a briefing note summarising key talking points on DSDMP from meeting on 15 October 2019.
6 November 2019	Letter	Murujuga Aboriginal Corporation	Woodside provided a written response to MAC's heritage-related comments on the DSDMP raised in the above briefing note.
27 November 2019	Email	Murujuga Aboriginal Corporation	Woodside provided MAC with a copy of the proposed Scarborough CHMP (Revision 1)
28	Quarterly	Ngarluma People, Yaburara and	Regular quarterly meeting with Traditional

Date	Activity	Stakeholders Involved	Summary of Engagement
November 2019	Karratha heritage meeting	Mardudhunera People, Wong-Goo-Tt-Oo People	Custodian groups. Woodside provided an overview of the proposed Scarborough Project and advised on expected timeframes for management plans and public comment periods.
2 December 2019	Letter	Murujuga Aboriginal Corporation	MAC provided additional comments in response to 6 November letter.
6 December 2019	Email	Murujuga Aboriginal Corporation	Woodside provided tabulated responses to MAC's comments raised after 15 October meeting, including heritage comments.
16 January 2020	Letter	Murujuga Aboriginal Corporation	Woodside recognises MAC's concerns regarding submerged rock art and reiterates that no rock with the potential for rock art will be disturbed. Woodside also makes commitments to support heritage research in the waters of Murujuga.

These consultations with Traditional Custodians highlighted that early concerns for heritage values included:

- that rock art would be disturbed by further development on Murujuga,
- that Site 19675 (Tool Shed) would be disturbed by further development on Murujuga,
- that submerged rock art may exist in the Development Envelope,
- that other forms of submerged tangible heritage may exist in the Development Envelope,
- that songlines may cross the Development Envelope.

These concerns have been addressed through:

- The Onshore Project Area not extending beyond previously cleared areas. The Onshore Project Area is situated entirely within areas that have been previously cleared
- Site 19675 (Tool Shed) being outside of the Project Development Envelope
- The completion of expert underwater archaeological assessment, with the involvement of MAC, that have concluded there is low to nil risk of the Project impacting underwater archaeology and no risk of the Project impacting petroglyphs that may be located underwater
- The completion of ethnographic heritage surveys by Traditional Custodians that have not identified any ethnographic heritage features, including songlines, but noting the Project is located within a sensitive cultural landscape.

4.3 Approvals Consultation

The conditions in the EPA Report for the Scarborough Project – Nearshore Component were published on 6 January 2020 and recommended a future revision of this CHMP which would require approval by the Department of Water and Environmental Regulation (DWER) as a prerequisite for construction of the Project. As such the purpose, content and format of the original CHMP changed substantially and further community consultation (Phase 2) was deemed necessary. Condition 7-2 of Ministerial Statement 1172 specifically requires consultation with the Murujuga Aboriginal Corporation (MAC). Consultation with MAC was also required on the Dredging and Spoil Disposal Management Plan (DSDMP) under Condition 6-2.

During this further phase of consultation (Phase 2), Woodside provided MAC with funding to engage an independent consultant and, for the second half of 2020, employ a staff member to ensure MAC was properly resourced to represent community views on the CHMP and other

matters. This consultation was undertaken between January 2020 and April 2022, and at MAC's direction primarily through their consultants. This consultation is detailed in Table 4-2.

Written comments on the CHMP and DSDMP were provided by MAC on 27 March 2020, following which a series of meetings, generally taking a full working day each, were held between 10 July 2020 and 25 March 2022. A total of 11 meetings wholly or partially addressing MAC's comments on the CHMP were held as part of a formal consultation program between these dates, indicated in bold in Table 4-2. These meetings were supplemented by further exchanges of written information and additional engagements with MAC's board, executive team and Circle of Elders.

In addition to the objectives already established under the previous consultation, the objectives of this consultation program were to:

- align Woodside and MAC on the approach to consultation,
- provide for a consultation program that allowed for timely, pragmatic and transparent resolution of issues,
- finalise the CHMP in consultation with MAC to meet the outcomes specified in condition 7-1 of Ministerial Statement 1172.

Table 4-2: Phase 2 (Approvals) Consultation with Murujuga Aboriginal Corporation

Date	Activity	Stakeholders Involved	Summary of Engagement
17 January 2020	Email	Murujuga Aboriginal Corporation	MAC requested additional information from Woodside in the form of an "information package".
13 February 2020	Email	Murujuga Aboriginal Corporation	Woodside delivered the component of the proposed information package related to heritage matters.
27 March 2020	Letter/report	Murujuga Aboriginal Corporation	MAC issued report with feedback to Woodside across three issues: 1. review of Draft Cultural Heritage Management Plan for the Scarborough Project (Ref no: SA0006GH1401311448) 2. review and MAC response to updated DSDMP (Rev 2 -submitted to EPA) 3. Implementation Plan for the Employment of Marine Fauna Observers and Cultural Heritage Monitors for the Scarborough and Pluto Expansion Projects.
10 July 2020	**Meeting**	**Murujuga Aboriginal Corporation**	**Woodside presentation including Project update and a proposed CHMP engagement roadmap.**
14 August 2020	Letter	Murujuga Aboriginal Corporation	Woodside issued MAC detailed written responses to comments received 27 March 2020.
20-22 October 2020	Assessment	Murujuga Aboriginal Corporation	MAC undertook ethnographic survey to understand the potential to impact ethnographic, cultural and spiritual values of the submerged landscape. Results are discussed in Section 5.5.4.
13 November 2020	Assessment	Murujuga Aboriginal Corporation	University of Western Australia researchers meet with the Circle of Elders as part of an archaeological assessment of the submerged landscape. Meeting includes discussion of heritage values and the scope of the Scarborough Project. Results are discussed in Section 5.5.3.
10	Assessment	Murujuga Aboriginal Corporation	University of Western Australia researchers,

Date	Activity	Stakeholders Involved	Summary of Engagement
December 2020			Woodside and MAC representatives participate in the collection of samples from cores for radiometric dating as part of an archaeological assessment of the submerged landscape. Results are discussed in Section 5.5.3.
11 December 2020	**Meeting**	**Murujuga Aboriginal Corporation**	**Woodside presentation and discussion on seabed intervention and shore crossing works to inform future discussions on the CHMP.**
19 January 2021	Meeting	Murujuga Aboriginal Corporation	Discussion of the results of the ethnographic survey conducted 20-22 October between Woodside, MAC and MAC's consultant anthropologist.
25 January 2021	Assessment	Murujuga Aboriginal Corporation	University of Western Australia researchers meet with the Circle of Elders as part of an archaeological assessment of the submerged landscape. Meeting includes discussion of results and the possible heritage significance of the findings. Results are discussed in Section 5.5.3.
2 February 2021	**Meeting**	**Murujuga Aboriginal Corporation**	**Woodside presentation and discussion on seabed intervention, heritage management and ongoing heritage works.**
15 February 2021	Meeting	Murujuga Aboriginal Corporation	Woodside and MAC CEO visited the shore crossing location to understand the exact location and landscape referred to in the CHMP.
25 February 2021	**Meeting**	**Murujuga Aboriginal Corporation**	**Discussion included delineation between DSDMP and CHMP with regards to cultural values of marine fauna.** **Discussion also included archaeological and ethnographic surveys underway and heritage management through the CHMP.**
10 March 2021	Meeting	Murujuga Aboriginal Corporation	Project overview provided by Woodside to MAC CEO
22 April 2021	Report	Murujuga Aboriginal Corporation	Woodside provides MAC with the executive summary of the report from the archaeological prospectivity assessment of the submerged landscape. Results are discussed in Section 5.5.3.
17 May 2021	Report	Murujuga Aboriginal Corporation	MAC provides email summary of the ethnographic survey conducted 20-22 October. Results are discussed in Section 5.5.4.
18 May 2021	Report	Murujuga Aboriginal Corporation	Woodside provides MAC with the final report from the archaeological prospectivity assessment of the submerged landscape. Results are discussed in Section 5.5.3.
19-20 May 2021	Meeting	Murujuga Aboriginal Corporation	Presentation of Scarborough Project to MAC Circle of Elders.
22 June 2021	Report	Murujuga Aboriginal Corporation	MAC provides final report of the ethnographic survey conducted 20-22 October. Results are discussed in Section 5.5.4.
24 June 2021	Meeting	Murujuga Aboriginal Corporation	Discussion between Woodside, MAC and MAC's consultant anthropologist of the results

Date	Activity	Stakeholders Involved	Summary of Engagement
			and interpretation of the recommendations of the ethnographic report provided on 22 April 2021.
7 July 2021	**Meeting**	**Murujuga Aboriginal Corporation**	**Woodside provides MAC with a detailed presentation of the archaeological and ethnographic work conducted to date and the contents of the CHMP.** **Consultation included discussion of the Woodside responses from 14 August 2020 to comments on the CHMP provided by MAC on 27 March 2020**
12 July 2021	Email	Murujuga Aboriginal Corporation	Woodside provides clarifications on the archaeological assessment report provided on 18 May 2021 and copies of previously provided documents including the ethnographic report discussed in Section 5.5.2.
16 July 2021	**Meeting**	**Murujuga Aboriginal Corporation**	**Meeting to discuss MAC feedback on the CHMP and heritage management**
21 July 2021	**Meeting**	**Murujuga Aboriginal Corporation**	**Woodside provided an overview of seabed intervention techniques to MAC's approvals officer**
5 October 2021	**Meeting**	**Murujuga Aboriginal Corporation**	**Woodside provided an overview of seabed intervention techniques and heritage management to MAC's underwater heritage consultant**
28 October 2021	Email	Murujuga Aboriginal Corporation	Woodside provides two proposals as alternatives to MAC's request for heritage monitors to operate permanently on construction vessels: • Audit visits to construction vessels to confirm appropriate heritage management • Collection of sediment samples for onshore analysis
2 November 2021	Email	Murujuga Aboriginal Corporation	At MAC's request, Woodside provided a SWOT analysis of the two proposals proposed on 28 October 2021
5 November 2021	**Meeting**	**Murujuga Aboriginal Corporation**	**Meeting to discuss MAC feedback on the CHMP and heritage management**
11 November 2021	Report	Murujuga Aboriginal Corporation	MAC provided Woodside a summary of the cultural and spiritual values of the marine environment to be considered in the CHMP, along with a presentation/position about intangible heritage values. Results are discussed in Section 5.5.5.
15 November 2021	Report	Murujuga Aboriginal Corporation	MAC provided Woodside with a report in response to the archaeological assessment provided on18 May 2021. This report outlines additional archaeological assessments requested by MAC. These have been agreed to and are discussed in Section 5.5.9.
15 December 2021	Meeting	Murujuga Aboriginal Corporation	Woodside presents an overview of the Scarborough Project to the MAC Board
18 January	Letter	Murujuga Aboriginal Corporation	Woodside responds to the requests made in

Date	Activity	Stakeholders Involved	Summary of Engagement
2022			the report provided on 15 November 2021.
2 February 2022	Letter	Murujuga Aboriginal Corporation	Woodside proposes establishment of Heritage Management Committee as proposed by MAC to respond to new information that may arise. This committee is discussed in Section 8.4.1.
10 February 2022	**Meeting**	**Murujuga Aboriginal Corporation**	**Woodside met with MAC to discuss Scarborough trunkline construction activities and the links to associated approvals including State and Commonwealth Environment Plans and the DSDMP and CHMP.** **A presentation pack prepared for the MAC Circle of Elders (CoE) detailing Scarborough Project trunkline construction activities and associated environmental and cultural heritage management measures was reviewed.**
25 February 2022	**Meeting**	**Murujuga Aboriginal Corporation**	**Woodside met with MAC to discuss report 15 November 2021 proposing additional submerged heritage works and way forward on submerged heritage assessments.**
8 April 2022	Email	Murujuga Aboriginal Corporation	Woodside reconfirms its position that wherever avoidable divers should not be used for submerged heritage investigations due to safety considerations.
8 April 2022	Letter	Murujuga Aboriginal Corporation	Woodside proposed a schedule for conclusion of engagements on CHMP (and DSDMP) prior to submission.
20 April 2022	Email/report	Murujuga Aboriginal Corporation	Woodside provided MAC an update on status of all actions from 10 February and 25 February.
27 April 2022	Meeting	Murujuga Aboriginal Corporation	Meeting proposed by MAC to discuss key remaining concerns (particularly assessment of contaminants) with the MAC Board.
27 April 2022	Meeting	Murujuga Aboriginal Corporation	Presentation of the Scarborough Project to the MAC Board
18 May 2022	Letter	Murujuga Aboriginal Corporation	Woodside requested clarity, following board meeting on 27 April, as to whether MAC considered the Phase II ethnographic survey to be necessary
15 June 2022	Meeting	Murujuga Aboriginal Corporation	Meeting to discuss the structure and funding of the proposed Heritage Management Committee (see Section 8.4.1)
28 June 2022	Letter	Murujuga Aboriginal Corporation	MAC advised that the Phase II ethnographic survey was considered necessary.
16 September 2022	Email	Murujuga Aboriginal Corporation	Results of submerged heritage expert gap analysis and SSS review provided to MAC
5 October 2022	Email	Murujuga Aboriginal Corporation	Request made to MAC for an update on their position on the proposed Heritage Management Committee (see Section 8.4.1)
6 October 2022	Email	Murujuga Aboriginal Corporation	MAC provided with an updated copy of the CHMP
7 October 2022	Letter	Murujuga Aboriginal Corporation	MAC provided their position on the proposed Heritage Management Committee (see

Date	Activity	Stakeholders Involved	Summary of Engagement
			Section 8.4.1)
27 October 2022	Meeting	Murujuga Aboriginal Corporation	Woodside presented the updated Cultural Heritage Management Plan to MAC's Circle of Elders, including a summary of assessments completed and Management Actions agreed. MAC raised concerns about provenance of rock used for backfill, removal of rock from the shore crossing area and requirement for consent to move any rock between Country.
17 November 2022	Letter	Murujuga Aboriginal Corporation	Letter advising on the design of the Project

Heritage values identified through this consultation, other than those set out in the resulting heritage assessments in Sections 5.5.3 to 5.5.5, related to cultural values of marine fauna, submerged landscape features, undiscovered ethnographic values held by neighbouring groups for which Murujuga's Traditional Custodians may be held culturally responsible, and the potential for undiscovered submerged tangible heritage or songlines. MAC also requested that workers and vessels be excluded from accessing beaches beyond the designated and previously disturbed shore crossing area.

Further comments were provided regarding the structure of the CHMP, explicitness of reference to the Burra Charter, additional information for a CHMP in an approvals context, and requirements for further heritage assessments as set out in Section 5.5.9. No specific sites or objects were identified through this consultation beyond those already recognised in earlier discussions.

MAC also requested that onshore and on-vessel heritage monitors be employed to identify tangible heritage that may be excavated during the Project. Woodside does not consider onshore heritage monitors necessary unless new ground is disturbed, which is not within the current Project design, but recognises that this is an easily facilitated request to provide community confidence in the Project. Traditional Custodians will therefore be invited to monitor works under this CHMP (**MA26**, see Section 7.2). On-vessel heritage monitors have not been accepted for several reasons, including the heightened safety risks of any on-vessel activity, shortage of on-vessel beds for monitors and the plausibility of visual observation of tangible heritage during operations due to the volume and method of sediment removal. Alternative methods to provide community assurance were proposed and are built into this CHMP (**MA23, MA25, MA27**, see Section 7.2)

On 27 October 2022, MAC raised concerns about provenance of rock used for backfill, removal of rock from the shore crossing area and requirement for consent to move any rock between Country. The actions, as drafted by MAC and provided to Woodside, reflect this in the following terms: "Taking rock from other Country is breaking law. This is an impact that has not been acknowledged. Consent to move any rock between Country must be sought – this will involve a meeting between MAC and Ngarluma Aboriginal Corporation ([MAC CEO] to talk to [Ngarluma Aboriginal Corporation (NAC) Heritage Environmental Officer]), with Boral [quarry operator] and Woodside involved as needed."

While Woodside is not able to mandate this meeting, Woodside has committed to supporting this engagement under **MA31**. On 4 January 2023 Woodside as contacted NAC's Heritage Environmental Officer in line with **MA35** and described in Table 4-3. NAC advised by email on 5 January 2023 that "The corporation endorse the use of Rock material from Hanson Quarry Mt Regal as fill for this project."

Consultation with other representative bodies and Traditional Custodians was also conducted following the publication of EPA Report for the Scarborough Project – Nearshore Component and Ministerial Statement 1172. These are recorded in Table 4-3.

Table 4-3: Phase 2 Consultations with other Traditional Custodians

Date	Activity	Stakeholders Involved	Summary of Engagement
12 March 2020	Quarterly Karratha heritage meeting	Ngarluma People, Yaburara and Mardudhunera People, Wong-Goo-Tt-Oo People	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update on the proposed Scarborough Project and environmental approvals.
11 June 2020	Quarterly Karratha heritage meeting	Ngarluma People, Yaburara and Mardudhunera People, Wong-Goo-Tt-Oo People	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update about proposed Scarborough Project and environmental approvals, including expected public comment periods.
10 September 2020	Quarterly Karratha heritage meeting	Yaburara and Mardudhunera People, Wong-Goo-Tt-Oo People	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update about proposed Scarborough Project and environmental approvals.
9 December 2020	Quarterly Karratha heritage meeting	Ngarluma People, Wong-Goo-Tt-Oo People	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update about the proposed Scarborough Project and environmental approvals.
19 March 2021	Quarterly Karratha heritage meeting	Wong-Goo-Tt-Oo People	Regular quarterly meeting with Traditional Custodian groups. Woodside provided an update about the proposed Scarborough Project and environmental approvals.
10 June 2021	Quarterly Karratha heritage meeting	Yaburara and Mardudhunera People, Wong-Goo-Tt-Oo People	Consultation with Traditional Custodians on measures included in the CHMP to manage heritage and the Scarborough DSDMP to manage environmental impacts.
19 September 2021	Quarterly Karratha heritage meeting	Yaburara and Mardudhunera People, Wong-Goo-Tt-Oo People	Update about the Scarborough Project and environmental approvals.
13 December 2021	Quarterly Karratha heritage meeting	Wong-Goo-Tt-Oo People	Update about the Scarborough Project and environmental approvals.
28 March 2022	Quarterly Karratha heritage meeting	Yaburara and Mardudhunera People, Wong-Goo-Tt-Oo People	Update about the Scarborough Project and environmental approvals.
17 June 2022	Quarterly Karratha heritage meeting	Wong-Goo-Tt-Oo People	Update about the Scarborough Project and environmental approvals.
25 October 2022	Quarterly Karratha heritage meeting	Ngarluma People, Yaburara and Mardudhunera People, Wong-Goo-Tt-Oo People	Update about the Scarborough Project and environmental approvals.
8 December 2022	Quarterly Karratha heritage meeting	Yaburara and Mardudhunera People,	Update about the Scarborough Project and environmental approvals.
4 January 2023	Meeting	Ngarluma Aboriginal Corporation	Meeting to discuss process for seeking consent or support from Ngarluma people to use rocks from Mount Regal quarry on Murujuga. Woodside was advised that NAC doesn't have any concerns or objections at this time to rock from Mt Regal Quarry being used in the

			proposed Rock Backfill areas, but that NAC will be having further conversations with the quarry about the extension of its operations generally. This is a matter for NAC and the quarry operator. Woodside remains available to hold discussions with NAC throughout the life of all of our projects.
6 January 2023	Email	Ngarluma Aboriginal Corporation	NAC provided an email confirming "The corporation endorse the use of Rock material from Hanson Quarry Mt Regal as fill for this project."

One additional heritage value was identified through these heritage consultations, relating to No Name Creek. No Name Creek lies outside of the Development Envelope and will not be impacted by the Scarborough Project.

4.4 Ongoing consultation

On acceptance of the CHMP, Woodside will continue to consult with Traditional Custodians during the execution phase. This will include:

- regular environmental, heritage and Project updates provided to MAC throughout the Project, nominally once every two months but subject to change in consultation with MAC as useful,
- continuation of quarterly Karratha heritage meetings,
- as-necessary meetings of the Heritage Management Committee described in Section 8.4.1, and
- completion of engagements identified by MAC as part of the CHMP consultation process but which were not concluded prior to submitting this CHMP, including:
  - a meeting with MAC consultants and Board members to discuss how new heritage information will be addressed following approval of this CHMP by DWER,
  - a presentation of the contents of this CHMP to the MAC Circle of Elders, and
  - a final meeting to confirm all outstanding actions have been completed.

Mechanisms for notifying Traditional Custodians of any additional heritage information or unexpected impacts to Indigenous heritage are detailed in Section 8.3.2.

Woodside considers that the Management Actions set out in Section 7 of this CHMP, the commitments that have otherwise been made in this CHMP, the surveys and studies that have been undertaken to inform this CHMP, and the process and outcomes of consultation with Traditional Custodians, comprehensively address the Ministerial Statement condition that Woodside to consult with MAC in relation to this CHMP.

5 Heritage Value and Significance Assessment

The first steps of the process set out in the Burra Charter require studies to be undertaken to understand the heritage place (ICOMOS 2013, Article 26.1), and an assessment culminating in a statement of cultural significance (ICOMOS 2013, Article 26.2). This is comparable to the description of the existing environment in other environment management plans.

Woodside recognises that Indigenous people must be central to the management of their heritage. As such, the significance statement presented in Section 5.1 is informed by the significance ascribed by Traditional Custodians, largely drawing from wording provided by MAC. This is complimented by desktop research including searches of heritage databases, heritage assessments including fieldwork and consultation with Traditional Custodians to ensure that as far as possible all heritage values have been identified in relation to the Project.

5.1 Murujuga Statement of Significance

Murujuga is a unique ecological and archaeological area with one of the largest, densest and most diverse collections of petroglyphs in the world. It is estimated that the peninsula and surrounding islands contain over a million petroglyphs covering a broad range of styles and subjects (UNESCO 2020). The landscape also contains quarries, middens, fish traps, rock shelters, ceremonial sites, artefact scatters, grinding patches and stone arrangements that evidence tens of thousands of years of human occupation. These places are linked through the stories, knowledge and customs that are still held by Traditional Custodians.

The stories that the petroglyphs tell have not been lost to history but instead are one key component of the living culture of the contemporary Aboriginal custodians of the land. Murujuga, including land and sea, the environment, petroglyphs and other heritage values are of continuing social, cultural, archaeological and spiritual significance for the Traditional Custodians, the Ngurrara Ngali (UNESCO 2020). Murujuga also has significant heritage value to the broader community as demonstrated through National Heritage Listing and World Heritage Tentative Listing.

The Murujuga Aboriginal Corporation (MAC) advises that:

> *Murujuga is sacred to Ngurrara Ngali, it is a place where everything is connected, through the Ancestral Beings, the land, the sky, the sea, the plants, the animals, the Lore and the spiritual world. This is the belief system that underlies life on Murujuga today.*

MAC has also advised that Ngurrara Ngali have cultural responsibility for the management of Murujuga and to continue to actively manage it to keep the Country healthy and visitors safe. This includes protection of rock art which depicts important aspects of lore and culture and must be remembered and preserved. These artworks are believed to be sacred works of ancestral creator beings, depicting cultural practices, songs, and mythologies.

Murujuga includes over 40 islands, but occupation of the area stretches back to a time when the sea-level was much lower and the islands would have been inland ridges or mountains. The now submerged northwest shelf would have been exposed and inhabitable out to a shoreline around 160 km beyond the current peninsula (Benjamin et al, 2020).

The Murujuga Aboriginal Corporation (MAC) and the State Government have begun the process to nominate the Burrup Peninsula for World Heritage Listing, which is supported by Woodside. If successful, the World Heritage Listing would highlight the Burrup Peninsula as having outstanding universal heritage values of international significance.

5.2 Approach to Heritage Significance

Woodside's approach to cultural heritage management has three complimentary theoretical underpinnings:

- **Values driven management**: Protection of heritage goes beyond identifying sites and minimising impacts. Attention must be paid to the values of a place to ensure nearby activities do not interfere with its significance. For example, where a site has spiritual value associated with secret or sacred knowledge, management of the site may require that workers are prevented from accessing nearby areas that have line of site to that location. Activities that occur away from the site itself may impact its values through several pathways, including buildings casting shadows, aesthetic impacts from infrastructure, or noise or smell detracting from the amenity or utility of a place.
- **Living heritage preservation**: Heritage values do not simply reside in physical places and historical objects, but in the relationships people have with those places and objects. In addition to tangible heritage such as artefacts or buildings, protection should be afforded to intangible heritage which can include local knowledge, stories, songs, ceremonies and events. Where this heritage is tied to locations, an attempt to "fence off" a site for its preservation may have the opposite effect on its intangible aspects by preventing people from performing cultural practices and responsibilities. Woodside believes the best way to preserve both tangible and intangible heritage is through the direct involvement of stakeholders. This does more than create transparency and accountability around heritage protection; it results in the preservation and renewal of connection to places and the past, enables the continuation of traditions and encourages the passing of knowledge between generations.
- **Cultural landscape protection**: Heritage sites are rarely created in isolation, without consideration or reference to the surrounding environment. In preserving the values of a site, it is necessary to consider the wider heritage landscape. Heritage values may rest in the landscape generally, beyond neatly defined boundaries. For example, two apparently separate sites may be closely linked by their heritage values and consideration must be given to activities that may impact this link (such as preventing access from one site to the other) even if there is no impact to the sites directly.

5.3 Key Assumptions and Uncertainties

The following key assumptions and uncertainties apply to this Management Plan:

- Traditional Custodians have an ongoing connection to their heritage through their living culture, and are the appropriate source of information of the cultural and spiritual values of heritage sites. Ethnographic surveys with Traditional Custodians (Sections 5.5.2 and 5.5.4) provide reliable information on the cultural, spiritual, aesthetic and social values of sites, objects and landscapes. Protection of the fabric of a heritage place may not provide adequate protection of all heritage values. Identification and protection of heritage values requires detailed assessment of those values (Section 5.5) and consultation with the communities who hold or experience those values (Section 4).
- Aboriginal people have occupied the Australian continent for 65,000 years (Clarkson et al 2017). Sea level has changed dramatically in this time and areas that were once inhabited are now submerged on the continental shelf (Veth et al 2019; UWA 2021).
- It is assumed that information provided through heritage registers (Section 5.4) is generally accurate but subject to a number of limitations, including:
    - That the Aboriginal Heritage Inquiry System does not record all Aboriginal heritage sites in Western Australia, and must be supplemented by heritage assessments (Section 5.5),

- That the Aboriginal Heritage Inquiry System does not record all heritage values of Aboriginal heritage sites that are included in the register, and must be supplemented by heritage assessments (Section 5.5),
- That archaeological site boundaries in the Aboriginal Heritage Inquiry System which extend into beyond the intertidal zone are the result of inaccuracies in site recording or deliberate ambiguity to maintain the confidentiality of site locations. The first sub-tidal Aboriginal archaeological sites are reported by Benjamin 2020 and do not overlap the project area.
- That, due to the operation of the offence provisions of the Heritage Act and EPBC Act, the Heritage Registers referred to in Sections 5.4.1 and 5.4.3 capture all protected World Heritage Sites, National Heritage Places and Western Australian registered places,
- That the Australasian Underwater Heritage Database and Western Australian Museum maritime archaeology shipwreck database do not record all shipwrecks or maritime sites that may be protected by the *Maritime Archaeology Act 1973* or UCHA, and reasonable steps must be taken to ensure no wrecks or other protected sites exist in the project footprint (Section 5.5.8)

- It is acknowledged that heritage assessments (Section 5) may not identify all heritage sites, objects and values. For example, it is noted in Section 5.5.1 that the light and shade and dominance of rocky boulder slopes and outcrops impact the certainty of 100% site discovery when identifying onshore rock art sites and in Section 5.5.4 that some information held by Traditional Custodians may not be shared due to its secret-sacred nature. This management plan relies on the best available evidence, but risk-based Management Actions (Section 7.1) must also account for the possibility of unidentified heritage values (e.g. through confining onshore construction activities to the previously cleared Onshore Project Area (**MA1**) and the application of the Chance Finds Procedure (**MA5**, see also Section 8.4.2). It is also necessary that a robust adaptive management plan is in place to address new information as it may arise (Section 8.4).
- Assessments completed for the Project to date provide valuable information for identifying and managing heritage values. However, as noted in Section 5.5.9, Woodside is supportive of additional cultural heritage assessments.. Regardless of the work already conducted, any additional assessment has the potential to result in the discovery of additional heritage values. Woodside's management of values in light of new heritage information is described in Section 8.4.

5.4 Register searches

5.4.1 National and World Heritage

Table 5-1 sets out the nearest World Heritage Areas (WHAs) and National Heritage Places (NHPs) to the Scarborough Project.

Table 5-1: Nearest World Heritage Areas and National Heritage Places

World Heritage Areas	
Ningaloo Coast	~206 km south-west of KP 160
Shark Bay	~562 km south-west of KP 160
National Heritage Places	
Ningaloo Coast	~206 km south-west of KP 160
Dampier Archipelago (including Burrup Peninsula)	~8 km east of KP 32
Shark Bay	~562 km south-west of KP 160

Dirk Hartog Landing – Cape Inscription	~654 km south-west of KP 160

Of these places, two are of cultural heritage value, the Dampier Archipelago (including Burrup Peninsula) and Dirk Hartog Landing - Cape Inscription. Dirk Hartog Landing is considered distant enough to not warrant further assessment. The remaining WHAs and NHPs are of natural heritage value and are beyond the scope of this CHMP.

National Heritage Values

The National Heritage Values of Dampier Archipelago (including Burrup Peninsula) are:

- the place's importance in the course, or pattern, of Australia's natural or cultural history, particularly in relation to the petroglyphs of the archipelago for their:
  - depiction of animals over a period of environmental change
  - records of past human activity
  - demonstration of the long history of contact and shared visual narratives between Aboriginal societies in the Dampier Archipelago and elsewhere
- the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history, through:
  - the diversity of styles and arrangements of petroglyphs
  - records of past human activity of petroglyphs
  - antiquity and duration of production of petroglyphs
  - the density of standing stones, stone pits and circular stone arrangements
- the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history, particularly in relation to the petroglyphs of the archipelago for their:
  - diversity of styles and arrangements
  - demonstration of the long history of contact and shared visual narratives between Aboriginal societies in the Dampier Archipelago and inland arid Australia
  - opportunity to establish a relative chronology of motif styles
- the place's importance in demonstrating the principal characteristics of: (i) a class of Australia's natural or cultural places; or (ii) a class of Australia's natural or cultural environments, through:
  - the diversity of styles and arrangements of petroglyphs
  - the density and understood purposes of standing stones
- the place's importance in demonstrating a high degree of creative or technical achievement at a particular period, particularly in relation to the petroglyphs of the archipelago for their:
  - diversity of styles and arrangements
  - demonstration of the long history of contact and shared visual narratives between Aboriginal societies in the Dampier Archipelago and elsewhere (Commonwealth of Australia, 2007)

In December 2018, Woodside submitted a referral and supplementary report for assessment by the former DoEE, now Department of Climate Change, Energy, the Environment and Water (DCCEEW), under the EPBC Act (Submission #3836). This submission included the following assessment by Woodside:

The significance of the potential impacts on the Dampier Archipelago (including Burrup Peninsula) National Heritage Place has been assessed. The proposal would not have any direct impacts to the Dampier Archipelago (including Burrup Peninsula) as it is located at least one kilometre from any construction activities and 1.6 kilometres from the trunkline at its closest location. The listing includes the waters surrounding some of the islands of the Dampier Archipelago. The proposal has the potential to result in the following indirect impacts:

- Water quality impacts from dredging potentially resulting in increased turbidity levels and sedimentation. Dredge plume modelling to estimate rates of sedimentation were previously undertaken for the Pluto LNG development which included spoil disposal within the same spoil grounds proposed for the current proposal as well as the installation of a trunkline immediately to the east of the proposed Scarborough trunkline. The Scarborough trunkline is proposing to use a similar methodology to the Pluto trunkline installation. The Pluto trunkline modelling identified that as the dredging activities move along the gas trunkline route deposition is predicted to temporarily increase but remain localised. Furthermore, previous monitoring studies have highlighted the high levels of suspended solids and sedimentation that occur through natural events (for example, swells and storms) and other port operations (such as ship movements) and previous dredge impact modelling studies that examined resuspension by storm events concluded that additional TSS and sedimentation that would be contributed by dredged material would be insignificant in relation to the wider resuspension and sedimentation budget of the area. Therefore, any potential impacts on heritage values are highly unlikely and are unlikely to result in the loss, degradation, damage, or notable alteration, modification of any of the heritage values of the Dampier Archipelago (including Burrup Peninsula)

-Water quality impacts from accidental oil spill from refuelling operations. The risk is considered highly unlikely but should it occur may result in hydrocarbon reaching the shoreline of the heritage place. In the unlikely event a spill occurs, the small volumes which would be released would limit the overall extent of the area impacted and the limit of exposure to sensitive receptors. This assumes no intervention. Management measures have been proposed to further minimise the scale of any oil spill.

-The trunkline would be located on the seabed and no indirect visual impacts would result. The proposed activities have been undertaken in Mermaid Sound in the past and the proposed trunkline is located further away from any shoreline compared to the previous trunklines previously installed to the east. The installation of these trunklines did not result in any significant impacts to the Dampier Archipelago (including Burrup Peninsula) heritage place.

The proposal is highly unlikely to result in significant impacts to the heritage values of the heritage place considering the distance of the proposal to the heritage place and the likely minor impacts that would result from both planned and unplanned events during construction. Management measures have also been recommended to further minimise the risk of any impacts. (Woodside 2018)

DoEE determined the project was not a controlled action if undertaken in particular manner (reference number 2018/8362) on 12 August 2019. The particular manner related to ecological protections for species managed outside of this CHMP.

World Heritage Values

In 2020 the Murujuga Cultural Landscape was included on Australia's World Heritage Tentative List. This submission does not include a finalised boundary, and therefore the proximity of any final listed area to the Development Envelope is unknown. Until this boundary is finalised the boundary of the National Heritage Place is assumed to be an approximate indication of the World Heritage Area. The Outstanding Universal Values proposed for the Murujuga Cultural Landscape are:

- Criterion (i): The Murujuga Cultural Landscape represents a masterpiece of human creative genius, particularly in relation to the petroglyphs of the archipelago for their:
  - density
  - diversity of styles and arrangements
  - use of profile and perspective
  - expressions of ideation, religion, ancestral cosmology
  - depiction of animals over a period of environmental change
  - antiquity and duration of production
- Criterion (iii): The Murujuga Cultural Landscape bears a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living, through:
  - the duration of human occupation
  - associations with the Ancestral Beings who created the physical world and Lore
  - the petroglyphs as places of continuing spiritual power including though rituals, ceremonies and initiation rites
  - the petroglyphs as places of education and initiation for future generations of Traditional Custodians
  - the petroglyphs as records of past human activity
  - the standing stones as places of importance for the regeneration of animal species
  - the standing stones as markers for navigation or location of resources
  - the continuation of unique cultural traditions and Lore over 50,000 years to the present day (UNESCO 2020)

Woodside understands that the Australian Government will also seek to have the Murujuga Cultural Landscape nominated under Criterion (v) being that Murujuga represents an outstanding example of a traditional human settlement, land use, or sea use which is representative of a culture, or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change (Department of Biodiversity, Conservation and Attractions, 2021).

5.4.2 Aboriginal Heritage Inquiry System

A review of the Department of Planning, Lands and Heritage's (DPLH) Aboriginal Heritage Inquiry System (AHIS) revealed six Registered Sites and 11 Other Heritage Places (OHPs) recorded as overlapping the Development Envelope, as shown in Table 5-2. Figure 5-1 illustrates these Sites and OHPs in relation to the Development Envelope.

The overlap of these Registered Sites and OHPs with the Development Envelope is a result of the buffering of their boundaries included on this register, except for one OHP (23323) which relates to the entirety of the peninsula as a feature. While the significance of the peninsula of Murujuga should not be understated, the scale of this feature does not allow meaningful consideration of the narrow Development Envelope. Research and surveys (see Section 5.5) appropriately discuss the potential impacts to heritage within this broader feature. This feature was assessed by the Department of Indigenous Affairs (now DPLH) and found not to meet the definitions of a site under the AHA.

Table 5-2: Sites and OHPs on the AHIS with buffered boundaries intersecting the Development Envelope

Status	ID	Type
Registered Site	9827	Engraving

Status	ID	Type
Registered Site	19642	Engraving, Grinding Patches / Grooves, Man-Made Structure, Mythological
Registered Site	19675	Artefacts / Scatter, Engraving, Midden / Scatter
Registered Site	19676	Artefacts / Scatter, Engraving, Grinding Patches / Grooves, Man-Made Structure, Midden / Scatter, Heritage Site
Registered Site	23340	Artefacts / Scatter, Engraving
Registered Site	23372	Engraving
Other Heritage Place (Lodged)	10600	Artefacts / Scatter, Midden / Scatter
Other Heritage Place (Lodged)	19188	Man-Made Structure
Other Heritage Place (Lodged)	23198	Camp, Hunting Place, Meeting Place
Other Heritage Place (Lodged)	23199	Ceremonial, Engraving, Mythological
Other Heritage Place (Lodged)	23200	Ceremonial, Engraving, Mythological
Other Heritage Place (Lodged)	23201	Ceremonial, Engraving, Mythological
Other Heritage Place (Lodged)	23202	Ceremonial, Engraving, Mythological
Other Heritage Place (Lodged)	23203	Ceremonial, Engraving, Water Source
Other Heritage Place (Lodged)	23204	Ceremonial, Engraving, Mythological, Meeting Place
Other Heritage Place (Lodged)	23205	Ceremonial, Engraving, Mythological, Natural Feature, Water Source
Other Heritage Place (Contact DPLH)	23323	Artefacts / Scatter, Ceremonial, Engraving, Fish Trap, Grinding Patches / Grooves, Historical, Man-Made Structure, Midden / Scatter, Modified Tree, Mythological, Quarry, Rockshelter, Skeletal Material / Burial, Arch Deposit, Camp, Hunting Place, Massacre, Meeting Place, Named Place, Natural Feature, Plant Resource, Shell, Water Source

Buffering of Registered Site and OHP boundaries results in large, inaccurate boundaries for the purpose of protecting the location of these places and limiting deliberate damage. Most of these boundaries at least partly overlap the Development Envelope in the nearshore, although no heritage features were recorded beyond the low water mark prior to 2020 (Benjamin 2020), which has seen a single sub-tidal site (ID 38628) added to the register approximately 5 km away from the project. Additionally, all surveys reported on the register overlapping the Development Envelope (excluding one desktop report with roughly defined boundaries) are confined to the onshore. Therefore, there is no potential for the register to record sites overlapping the Project in the waters of Murujuga.

Onshore heritage surveys conducted for the Pluto LNG Project included the Project Development Envelope and as discussed in Section 5.5.1 did not record any Aboriginal sites within this area. The onshore Development Envelope has since been comprehensively disturbed, leaving no tangible heritage within Onshore Project Area. More accurate, un-buffered boundaries of the nearest recorded Sites are provided in Mott 2019 (see 5.5.2) and confirm that these are adjacent to the Development Envelope, but do not overlap the Development Envelope.

The absence of Registered Sites or Other Heritage Places cannot be taken as evidence that Aboriginal heritage does not exist and has been supplemented by heritage assessments (Section 5.5).

5.4.3 Heritage Council inHerit database

There are 122 results on the Heritage Council's inHerit database for the City of Karratha LGA which includes the Onshore Project Area. Of these, 29 are State Registered Places which attract legislated protection under the Heritage Act. None of the 122 places on this database except the

National Heritage Listed place (see Section 5.4.1) are recorded as overlapping the Onshore Project Area.

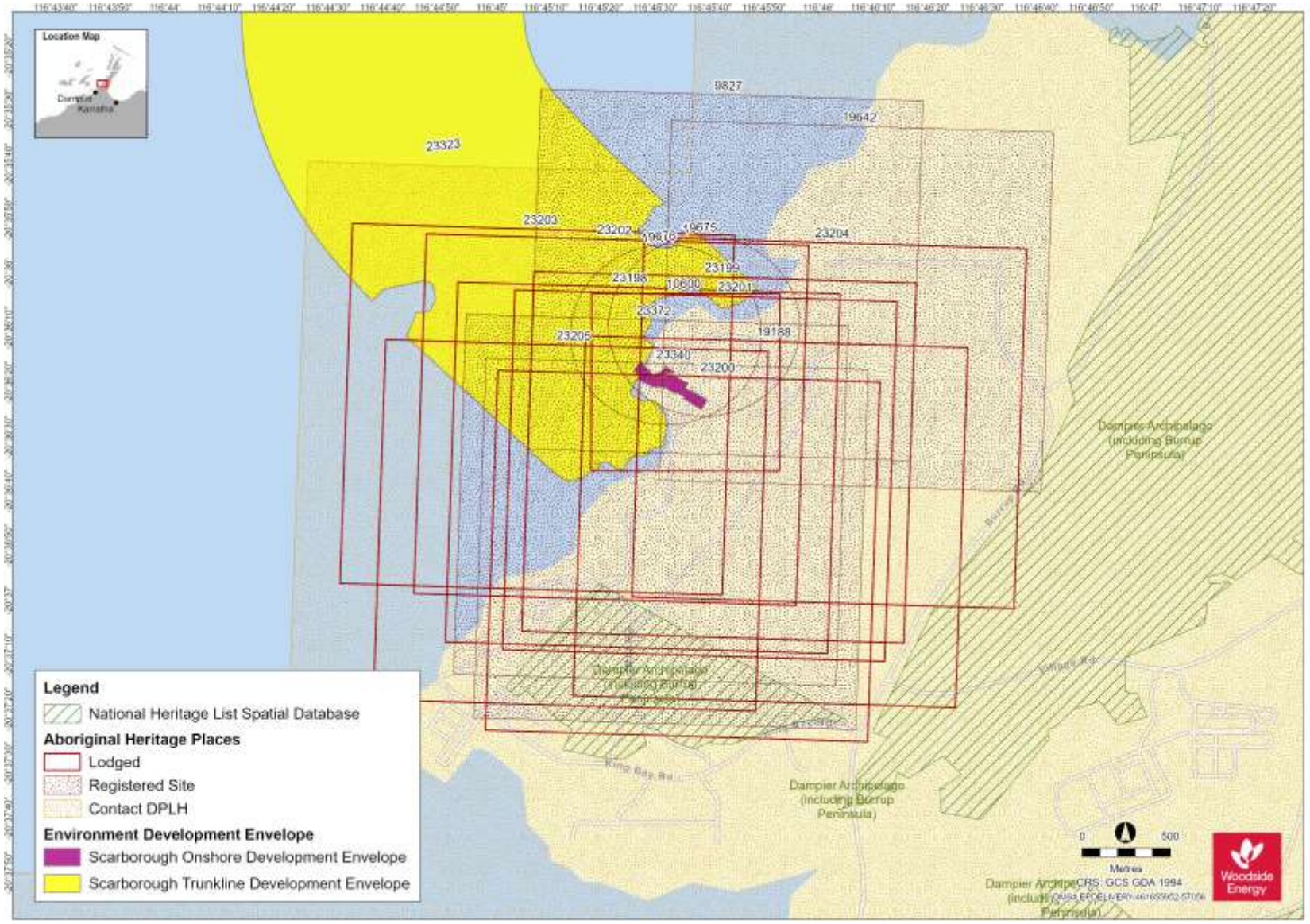

Figure 5-1: National Heritage Places, Registered Sites and Other Heritage Places overlapping the Development Envelope

5.4.4 Shipwrecks and underwater historic heritage

A search of the Australasian Underwater Heritage Database identified 6 shipwrecks at two locations near the proposed Scarborough trunkline route (Table 5-3 and Figure 5-2). The clustering of these wrecks indicates that the accuracy of the recorded locations of these wrecks are imprecise and may overlap the Development Envelope. However, all of these wrecks are located well beyond state waters and are only included in this CHMP for completeness. No other forms of protected underwater cultural heritage were identified on this database, and the Project does not cross any underwater heritage protected zones.

Table 5-3: Australasian Underwater Heritage Database results near the Scarborough trunkline route

Name	ID	Latitude	Longitude	Wrecked	Protecting Act(s)
Curlew	3925	-20.00000000	115.16666667	1911	UCHA
Marietta	4475	-20.00000000	115.16666667	1905	UCHA
McCormack	8223	-20.13666667	115.95333333	1989	None
McDermott Derrick Barge No 20	4502	-20.13666667	115.95333333	1989	None
Vianen	5062	-20.00000000	115.16666667	1628	UCHA
Wild Wave (China)	5113	-20.00000000	115.16666667	1873	UCHA

No additional protected heritage was identified through WA Museum's Maritime Archaeology shipwreck database.

To account for the apparent unreliability of the spatial data and protected wrecks that may not be recorded on the databases, geophysical data has also been assessed (Section 5.5.8). Review of the Side Scan Sonar of the seabed along the trunkline route identified one feature that was initially considered a possible shipwreck but based on texture and sharpness of the image was ultimately assessed to be a natural feature. Review of this data did not identify any evidence of the recorded wrecks or other maritime heritage within the Development Envelope.

No further information on the location of the recorded wrecks is available.

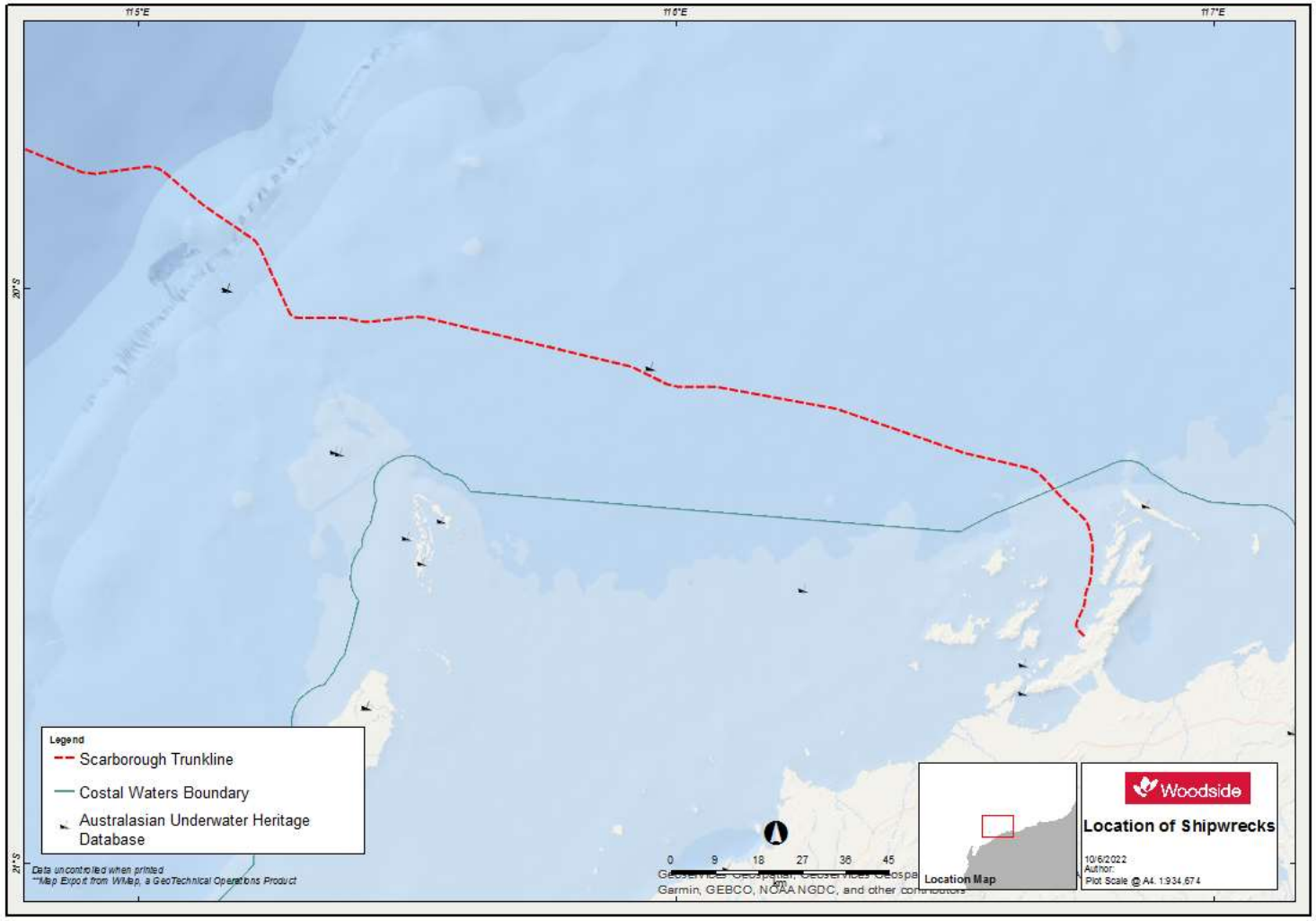

Figure 5-2: Location of nearest recorded features on the Australasian Underwater Heritage Database

5.5 Heritage Assessments

5.5.1 Previous Assessments and Development

In 2005 and 2006 heritage surveys were undertaken for the Pluto LNG Project over 'Site A', which includes the Onshore Project Area. These surveys included archaeological survey (Draper *et al.* 2006); an ethnographic survey undertaken with Ngarluma, Yindjibarndi, Yaburara and Mardudhunera people (AIC 2006) and a combined archaeological and ethnographic survey undertaken with Wong-Goo-Tt-Oo People (O'Connor and O'Connor 2006).The Project will not impact upon any heritage sites identified on these surveys, and the recommendations of these survey reports, including that Woodside avoid and otherwise minimise impacts to heritage sites, establish and maintain conservation zones and continue to involve Traditional Custodians in this work, have informed this CHMP.

Draper *et al.* 2006

Draper *et al* undertook "field survey over the entirety of Industrial Site A… to re-record previously recorded sites… as well as to record previously unrecorded sites" through "comprehensive pedestrian survey" with transects "varying in spacing from approximately 5 to 20 metres, depending on terrain and surface visibility" (Draper *et al.* 2006, 18). The authors note that "Although one can never be certain of a 100% site discovery on the Burrup Peninsula because of changing conditions of light and shade and the dominance of rocky boulder slopes and outcrops… the ground coverage achieved by our inspection is comprehensive by industry standards, and we estimate that we have accounted for approximately 95% of all archaeological sites." (Draper *et al.* 2006, 18).

These sites were assessed for archaeological scientific and public heritage significance, but it was noted that cultural significance would require the results of ethnographic surveys (Draper *et al.* 2006, 22). Ethnographic surveys with Yaburara, Mardudhunera, Ngarluma and Yindjibarndi people were conducted simultaneously with this survey but are reported separately (Draper *et al.* 2006, 15). Wong-Goo-Tt-Oo people were also consulted but conducted field surveys at a different time (Draper *et al.* 2006, 15). The only site identified or recorded in proximity to the Onshore Project Area is Site 19675 also known as the Tool Shed (Draper *et al.* 2006, 36).

Recommendations of this report related only to the application for approval under Section 18 of the AHA, and do not influence the assessment of heritage values or resulting mitigations for the Scarborough Project. The Project will not impact any of the sites identified during this survey.

AIC 2006

Australian Interaction Consultants (AIC) undertook ethnographic inspection and consultation with Yaburara and Mardudhunera People, and separately with Ngarluma and Yindjibarndi People (AIC 2006, 2). The Project will not impact any of the sites identified during this survey. Ethnographic survey is the most reliable method, and industry standard, for identifying the cultural, spiritual, aesthetic and social values of heritage objects, sites and landscapes held by Traditional Custodians.

O'Connor and O'Connor 2006

Heritage surveys were undertaken by the Wong-Goo-Tt-Oo people over the Pluto LNG Project leases, including the Scarborough Onshore Project Area in 2006. The Project will not impact any of the sites identified during this survey.

Pluto Development

The above reports supported the receipt of ministerial consent to disturb certain heritage sites for the construction of the Pluto LNG development (see Section 2.3.1). Over 90% of rock art on the Pluto leases were preserved in situ, with the remainder relocated under the supervision of

Traditional Custodians to appropriate nearby relocation zones. No tangible heritage remains in the Onshore Project Area.

Site 19675 (Tool Shed) was recorded during these surveys and is within a designated and intact conservation zone that will not be impacted by the Project. Pluto construction did disturb land within an ethnographic complex identified in the AIC report, but no ethnographic sites within this complex were recorded within the area disturbed by construction.

5.5.2 Mott 2019 – Preliminary Desktop Assessment and Ethnographic Inspection

The first heritage assessment undertaken specifically for the Project was a desktop review of the archaeological literature and ethnographic survey (Mott 2019). Ethnographic survey is the most reliable method, and industry standard, for identifying the cultural, spiritual, aesthetic and social values of heritage objects, sites and landscapes held by Traditional Custodians.

The review of the archaeological literature confirmed that sea levels on Murujuga had changed substantially during the timeframe that Australia has been occupied, and that Aboriginal people could have occupied and used landscapes on the now submerged continental shelf. This review also identified the research underway at that time by the Deep History of Sea Country (DHSC) Project on Murujuga through which "researchers are looking at the current previously recorded Aboriginal heritage sites datasets from terrestrial surveys etc and are using principles of geological, geomorphological and environmental associations to extrapolate to submerged landscapes." (Mott 2019, 17)

A key paper from the DHSC research identified five "combinations of geomorphic context and archaeology" in the submerged environment around Murujuga that would "form the most prospective of targets":

1. *midden and artifacts within cemented dunes, relict water holes, and beach rock deposits;*
2. *quarry outcrops, extraction pits, and associated reduction debris in fine-grained volcanic outcrops;*
3. *circular and curvilinear stone structures and standing stones sitting on volcanic pavements and jammed into volcanic rock piles;*
4. *lag deposits of artifacts and possibly midden on hardpan in suitable landscape contexts with good preservation conditions (e.g., shallow declination shorelines in sheltered passages of the inner archipelago or on the leeward side of hard-rock/fringing reef causeways adjacent to the outer islands); and*
5. *small overhangs and shelters with preserved deposits, facing away from the dominant wave and wind action.*

The recommendations arising from this work included engaging with researchers on submerged heritage in Mermaid Sound, extending the fence line around Site 19675 (Tool Shed) conservation zone and ensuring that Project staff receive cultural awareness training. These recommendations have either been implemented or comprise Management Actions in this CHMP.

5.5.3 UWA 2021 – Scarborough Pipeline Cultural Heritage Assessment

In adopting the recommendations of Mott 2019, from mid-2019 and throughout 2020 Woodside engaged with members of the DHSC research team on the progress of their research and how this could inform best practice management of submerged heritage. In mid-2020 DHSC published the discovery of artefacts from submerged areas of Murujuga approximately 5km for the Scarborough Project, demonstrating the practical value of their approach. The DHSC Project concluded soon after, but Woodside continued to engage with its members and in late 2020 Woodside engaged two of these researchers from The University of Western Australia's School of Earth Sciences and The Centre for Rock Art Research + Management to undertake a desktop underwater cultural heritage assessment for Aboriginal archaeology across the Development Envelope in consultation with MAC.

This research was an Australian-first, seeking to reconstruct the paleo landscape of Murujuga from existing bathymetric and geophysical data collected for the Scarborough Project, radiometric dating of samples from existing geological cores and knowledge of pre-historic sea level change. Knowledge of previous disturbance to the seabed and the distribution of Aboriginal sites on land was then used to identify areas of the submerged landscape that would be prospective for archaeological material (UWA 2021).

Consultation with the MAC Circle of Elders through this Project identified certain features that would be of interest, including ancient rivers, springs and mounds. Although the focus of the assessment was purely archaeological, it was advised that these features would have potential cultural and spiritual values through relation to song lines. UWA concluded that none of these features were located in the Development Envelope.

The results of this assessment were divided into three geomorphic zones: the inner shelf within state waters, mid shelf crossing state and commonwealth waters and outer shelf within commonwealth waters. The findings in relation to each geomorphic zone are set out in Table 5-4. Across all three zones it was found that no igneous rock would be impacted by the Project. This is the type of rock that hosts rock art on Murujuga.

No assessment was made beyond the outer shelf, as this is beyond the lowest sea level during human occupation and is not considered archaeologically prospective as it would not have been inhabited by people at any time.

Table 5-4: Findings of UWA 2021

Geomorphic Zone	Location	Findings
Inner shelf	0-30 km along pipeline 0-35 m below sea level	The inner shelf, including Mermaid Sound, contains four well-preserved coastal formations. Ages for these formations were derived from radiometric dates and known prehistoric sea levels and found to pre-date the oldest evidence of human occupation of Australia, making it “unlikely that these prospective features will contain UCH” The risk of the Project impacting archaeology in the inner shelf location was considered “nil or very low”. The selected route is “From a purely scientific perspective… the preferred pipeline route within Mermaid Sound”.
Mid shelf	30-155 km along pipeline 35-75 m below sea level	The mid shelf is covered with thick sediments that would have washed in following inundation. It is not possible for in-situ archaeology to exist in these sediments. The risk of the Project impacting archaeology in this location was considered “nil or very low”.
Outer shelf	155-190 km along pipeline 75-120 m below sea level	The outer shelf contains a “complex barrier-beach/estuarine coast”. No samples were available to allow radiometric dating of this feature, however based on prehistoric sea levels these would have formed between 57,000 and 29,000 years ago during some of the earliest ages of human occupation of Australia and have the potential to contain artefacts of “high scientific significance”. It was found that “the pipeline route itself does not cross any [archaeologically] significant landforms or features” and observation of the seabed by remotely operated vehicle confirmed that these sensitive features were covered and protected by layers of modern sediment and marine growth. The risk of the Project impacting archaeology in the inner shelf location was considered “nil-to-low”. It is also stated that “The current pipeline alignment avoids several higher value landforms which increased heritage sensitivity (i.e., karst depressions, tidal

		channels) in proximity to the pipeline (c. 1 km distance further north). The method of laying the pipeline here (lying it on the surface) minimises the likely impact on potential heritage.
No assessment was made beyond the outer shelf, as this is beyond the lowest sea level during human occupation and is not considered archaeologically prospective as it would not have been inhabited by people at any time.		

5.5.4 McDonald and Phillips 2021 – Ethnographic Consultation

To complement the assessment of archaeological heritage by UWA, MAC was requested to coordinate a two-phase ethnographic consultation. Ethnographic survey is the most reliable method, and industry standard, for identifying the cultural, spiritual, aesthetic and social values of heritage objects, sites and landscapes held by Traditional Custodians. Phase I of this consultation was conducted by Ethnosciences in October 2020 (McDonald and Phillips 2021). Phase II has yet to be conducted at a time convenient for MAC and their consultants but will extend beyond the industry-standard scope of ethnographic survey to involve consultation with Indigenous people beyond the immediate Traditional Custodians of Murujuga to understand any impacts to song lines as they travel inland.

This ethnographic survey was run by MAC, and the scope of this survey required "Full recording and significance assessment. The consultant is to provide advice as to whether there are cultural values within and nearby the footprint area..." Discussion with MAC's CEO has confirmed that MAC do not consider that they have failed to deliver on this scope. The survey was conducted with members of MAC's Circle of Elders, who are recognised as cultural authorities for Murujuga, and the final report was approved by the Circle of Elders prior to being provided to Woodside. Therefore, Woodside understands the Phase I works to adequately describe and assess the cultural, spiritual, aesthetic and social values held by Traditional Custodians for the project area and surrounding land- and seascape.

The Phase I consultation confirmed the results previously reported in Mott 2019 that stories and song lines were found to extend from the sea onto land, however no ethnographic sites were reported in the Development Envelope. Significant sites were noted to exist outside of the Development Envelope. The report also identified cultural knowledge holders to be consulted in the Phase II research. Finally, this Phase I consultation recommended that Woodside and Traditional Custodians continue to work together including through the sharing of information about cultural landscapes, in particular the submerged landscape mapping.

The report also noted that some traditional knowledge of country appears to have been lost due to the impacts of colonisation, and acknowledges that there may have been information not shared by Traditional Custodians due to its secret-sacred nature.

5.5.5 MAC 2021 – Cultural Values of the Environment Consultation

Through consultation with MAC (see Section 4), it was identified that the cultural and spiritual values of marine fauna and benthic communities required further clarification. Through engagements with Elders and Murujuga Land and Sea Unit Rangers, MAC produced a summary of identified values associated with marine fauna, benthic communities and other areas of Mermaid Sound.

The results of this work stressed that "this list should not be considered exhaustive" and "Elders were clear that all living things in Mermaid Sound are connected and important…Mermaid Sound and Dampier Archipelago (Murujuga) is considered one place where the entire environment and all ecosystems hold both cultural and environmental value".

The following fauna, communities and habitats were identified as being culturally important:

- Dolphins and whales, and particularly Humpback whales
- Dugongs
- Fish

- Sea snakes
- Turtles
- Squid
- Corals
- Seagrass
- Mangroves
- Microalgal communities
- Subtidal soft-bottom communities
- Intertidal sand and mudflat communities
- Rocky shores

Management of the ecological and environmental quality of Mermaid Sound and Murujuga is captured in environmental management plans for the Scarborough Project, and in particular the Dredging and Spoil Disposal Management Plan (DSDMP) which was also informed by this report and subject to approval under Ministerial Approval 1172. However, the cultural values of these resources lie beyond the scope of these plans and are within the scope of this CHMP.

Cultural values identified in relation to the fauna, communities and habitats include:

- Totemic and ecological values relating to preservation and custodianship of species
- Ceremonial values, including thalu (increase ceremony)
- Connection to song lines
- Food resources (e.g. fishing, squidding, crabbing or hunting)
- Shelter

Most of these values are considered to be preserved where impacts to species populations are avoided, as managed through the DSDMP and other environmental plans. Ceremonial values and values as food resources, however, are understood to require that access to habitats and species are also maintained—for example that beaches are not disturbed or fenced off.

5.5.6 Coroneos 2021

In November 2021 MAC provided Woodside with a report on the assessment of submerged archaeology for the Scarborough Project (Coroneos 2021). This report included four recommendations. These are summarised in Table 5-5 below.

Table 5-5: Implementation of Coroneos 2021 recommendations

Summary of Recommendation	Implementation for Scarborough Project
1 – Build on the work of UWA 2021 to incorporate an assessment of buried Pleistocene surface prospectivity by an underwater archaeologist.	Woodside has contracted an underwater heritage expert to review all of the heritage work detailed in Section 5.5 to identify any gaps in this assessment including specifically buried Pleistocene surfaces. This work has been completed (see Section 5.5.7).
2 – Assessments of heritage values other than archaeological be completed.	Coroneos 2021 was a review of UWA 2021 in isolation, which only considered the archaeological/scientific values of heritage. Other heritage values were assessed outside of UWA 2021, particularly by Mott 2019 and McDonald and Phillips 2021. Further work to assess social/cultural, spiritual and other values is contemplated through Phase II ethnographic survey (see Section 5.5.9), subject to MAC support, but is not considered necessary for adequate heritage

	management.
3 – Devising a suitable impact assessment and mitigation process for intangible heritage.	Coroneos 2021 was a review of UWA 2021 in isolation, which only considered the archaeological/scientific values of heritage. Coroneos 2021 identifies a number of issues in applying the risk approach of UWA 2021 to other types of heritage values, though this was contemplated in UWA 2021. Woodside agrees with this observation and instead incorporates management of these values through: • adopting where practical the recommendations of ethnographic surveys and other assessments identifying these values, • applying the impact and management assessment process of this CHMP (Sections 6 and 7), and • seeking the recommendation of the Heritage Management Committee described in Section 8.4.1
4 – Implement the submerged heritage management process proposed by Coroneos 2021 with the involvement of an underwater archaeologist.	The process recommended by Coroneos comprises six steps and is discussed below, along with Woodside's commitments to its implementation below.

Heritage Management Process proposed in Coroneos 2021

The process proposed by Coroneos 2021 contains six steps:

1. Desktop assessment
2. Geophysical survey
3. Site inspection
4. Significance assessment
5. Impact assessment
6. Maritime Archaeological Management Plan

It is acknowledged by Coroneos 2021 that UWA 2021 addresses Step 1 of this process, and is considered "excellent" where it addresses this scope. It should be noted that Coroneos was also engaged as a peer reviewer of UWA 2021 prior to finalisation of that report.

Step 2 relates to the collection of geophysical data; it is noted by Coroneos 2021 that in many cases Step 2 is undertaken ahead of Step 1, though this is undesirable, and that the UWA assessment "partially falls into that category." Geophysical data was utilised by UWA during their assessment (UWA 2021), though Side Scan Sonar (SSS) Data was not used. Coroneos 2021 notes that SSS is "the most widely used tool for locating anomalies of cultural heritage potential" and MAC requested that a review of available SSS be undertaken to ground-truth the UWA 2021 conclusions. This work has been completed (Nutley 2022b, see Section 5.5.8)

Step 3 of the Coroneos 2021 process requires physical inspection of target features or landscapes identified in Steps 1 or 2. No features were identified by UWA 2021 or Nutley 2022b that warrant further inspection. However, MAC has advised that they consider the exposed calcarenite ridges in Mermaid Sound to warrant direct inspection. This work is proposed in section 5.5.9.

Step 4 requires an assessment of the significance of any submerged heritage by an underwater archaeologist. Significance assessment formed part of the scope for Nutley 2022b, however no heritage has been identified in the nearshore or offshore Development Envelope of the Scarborough Project.

Step 5 requires an impact assessment to be completed by an underwater archaeologist. No heritage has been identified in the nearshore or offshore Development Envelope of the Scarborough Project. An impact assessment of heritage features and values identified across multiple disciplines is included in this CHMP (Section 6).

Step 6 of the Coroneos 2021 process requires development of a Maritime Archaeological Management Plan. Consultation between MAC and Woodside has agreed that this should not be a separate plan to this CHMP, and instead underwater cultural heritage is managed as part of this CHMP.

5.5.7 Nutley 2022a – Gap Analysis

Following advice provided by MAC (Coroneos 2021, see 5.5.6) Woodside engaged an external consultant to undertake a gap analysis (Nutley 2022a) for their previous heritage assessments (Mott 2019, MAC 2021, McDonald and Phillips 2021, UWA 2021) plus an internal consolidated review (Mott 2021).

The scope of works for this work was to:

1 Review of Heritage Process to date and gap identification

2 Review of Side Scan Sonar data ... (Discussed separately in Section 5.5.8)

3 Advise, based on 1. and 2. above if any direct inspection of the seabed is warranted or required

4 Provide an assessment of the heritage significance, extent of possible impacts and mitigation options for the project

This scope completes the process identified in Coroneos 2021 for all currently available heritage information.

The gap analysis noted the omission of peat beds as a feature that may contain potential heritage values. The gap analysis also noted a few uncertainties such as the potential for fish traps or catch points for displaced artefacts. These are addressed in the remote sensing review (Nutley 2022b).

Geotechnical testing conducted for the Scarborough Trunkline was reviewed following this advice. This testing has not identified any peat beds in the near shore or offshore Development Envelope or broader landscape (Neptune Geomatics 2018). Peat beds do not exist in the Onshore Project Area.

5.5.8 Nutley 2022b – Side Scan Sonar Review

An external review of the Side Scan Sonar (SSS) data was undertaken in conjunction with the 'Shallow Water Geophysical & Geotechnical Survey 2018 Results' report by Neptune Marine Services (2019). Although the remote sensing data was not targeted specifically at underwater cultural heritage, the review noted the data was sufficient to provide a platform for assessing features that may require further investigation (Nutley 2022b).

In relation to the potential for catch points identified through the sub-bottom profiler survey, the report noted they are areas where Aboriginal artefacts could have been trapped *in situ* or redeposited during erosion of ridgeline habitation sites (Nutley 2022b). These were highlighted as a potential area for concern, specifically between KP 18.54 to KP 19.8 (Figure 15 in Neptune 2019:35) where the sub-bottom profiler survey has recorded deep, potential catch points on either side of a ridge of calcarenite outcropping. Nutley advised that "If such [archaeological] deposits are present they are expected to be contained in older sediments near the base of such catchments. Therefore, consideration should be given to minimising the depth of such disturbance to avoid the lower half of any catchment area." (Nutley 2022b). Woodside confirmed that dredging at 2.1m would not reach these potential catch points that are at a depth of some 5m.

This review identified numerous clusters of depressions which are "certainly naturally occurring features" and "none of them appear to be archaeological in nature" but requested further advice on what these represented to better understand the landscape and whether these were permanent features such as karsts. Woodside was able to confirm from existing data and previous investigation that these depressions in sandy sediments are a result of marine life and moving fluids.

The review also identified one anomaly with the potential to be a shipwreck and recommended that "A cross reference with [Multibeam Echo Sounder] imagery of this location and specific advice from the hydrographers would be useful to assist in its interpretation. If still inconclusive, I recommend that an ROV be deployed to examine it in further detail." Multibeam Echo Sounder imagery was consulted and the feature was determined to be a natural feature. This data was shared with the author of the review on 1 September 2022 who advised on September 6 that he was "happy with the feedback provided to the queries".

The report concluded:

"Apart from the Pluto pipeline, no other anomalies of potential cultural origin were detected in the SSS data. No indication of stone structures such as fish traps, or hut foundations could be detected in the inner reef, middle shelf or outer shelf areas. In the middle shelf and outer shelf there were no indicators of former riverbeds, creek lines or lakes with which such feature may be associated." (Nutley 2022b)

Nutley 2022a and 2022b jointly address the process set out in Coroneos 2021, as set out in Table 5-6.

Table 5-6: Implementation of Coroneos 2021 process through Nutley 2022a and 2022b

Coroneos 2021 Process	Nutley 2022a and 2022b Scope	Notes on Implementation
Desktop assessment	Review of Heritage Process to date and gap identification	Results discussed in Section 5.5.7
Geophysical survey	Review of Side Scan Sonar data	Results discussed in Section 5.5.8
Site inspection	Advise, based on 1. and 2. above if any direct inspection of the seabed is warranted or required	Nutley 2022b identified one feature, described as a possible shipwreck, where it was recommended that ROV be deployed for direct inspection if existing additional information, including Multibeam Echo Sounder data could not provide adequate clarity. The additional information did provide clarity that this feature was natural, and thus no site inspection was determined as necessary.
Significance assessment	Provide an assessment of the heritage significance… for the project	No heritage features were identified which will be impacted by the project.
Impact assessment	Provide an assessment of the… possible impacts and mitigation options for the project	Initial advice proposed several possible impacts, including dredging at catch points and disturbance of a possible shipwreck. Mitigation options proposed included avoiding the lower half of the catch points and consulting additional data to confirm whether the possible shipwreck might be a natural feature. These mitigations were adopted and confirmed there was no expected impact to heritage values.
Maritime Archaeological Management Plan	N/A	Development of this CHMP was conducted by Woodside as required by MS1172, with input and review by Nutley outside of heritage assessments.

5.5.9 Further Heritage Assessments

The cultural heritage assessments undertaken for the Project have been thorough and meet Woodside's obligations under state and federal legislation, including the conditions of Ministerial Statement 1172.

Ethnographic Assessment

The ethnographic assessments reported in Mott 2019 and McDonald and Phillips 2021 are aligned to industry standards for ethnographic surveys and are considered sufficient to manage heritage values during the Project. In particular, McDonald and Phillips 2021 was run by MAC, and the scope of this survey required "Full recording and significance assessment. The consultant is to provide advice as to whether there are cultural values within and nearby the footprint area..." The final payments related to this work were contingent on delivery of this scope, and have been finalised. Discussion with MAC's CEO has confirmed that MAC do not consider that they have failed to deliver on this scope. The survey was conducted with members of MAC's Circle of Elders, who are recognised as cultural authorities for Murujuga, and the final report was approved by the Circle of Elders prior to being provided to Woodside. Therefore, Woodside understands the Phase I works to adequately describe and assess the cultural, spiritual, aesthetic and social values held by Traditional Custodians for the project area and surrounding land- and seascape.

However, the survey by McDonald and Phillips 2021 was envisaged as the first of a two-phase Project. The second phase goes beyond industry standard by engaging with neighbouring Aboriginal groups to identify potential ethnographic values that traverse traditional group boundaries. This work is to be conducted through and managed by MAC to ensure that the Traditional Custodians have full control over this process and the community politics of having external groups comment on Murujuga do not have the effect (real or perceived) of disenfranchising Ngarda-Ngarli people.

The request to conduct this survey has been with MAC since 2020 and has not been actioned. Woodside has followed up on this request a number of times between the conclusion of Phase I and submitting the CHMP.

Woodside remains committed to supporting MAC to conducting the Phase II works at the earliest date convenient to MAC and their preferred consultant but will also respect any decision by MAC not to proceed. Woodside does not consider the Phase II works to be necessary to the preparation of this CHMP or construction of the Scarborough Project, being above and beyond industry standards or regulatory requirements and considering the extensive works already completed but recognizes such work may be of benefit to stakeholders in addressing cultural obligations to neighbouring groups.

Woodside believes it has taken all reasonable steps to progress this work, and, as per **MA34**, is committed to support this additional ethnographic survey work to be undertaken, subject to MAC undertaking the works.

ROV Inspection

The process set out in Section 5.5.6 also recommended direct inspection of features or landscapes prospective for submerged heritage. As noted throughout the assessments to date, no such features or landscapes have been identified, including by Nutley 2022a whose scope of work included to "Advise… if any direct inspection of the seabed is warranted or required". As a result, no targets for direct inspection were identified. In a meeting with the MAC Board and Circle of Elders on 27 October 2022, MAC have advised that they consider the exposed calcarenite ridges to warrant direct inspection.

Woodside is therefore committed to undertake an inspection of the trunkline centreline over the exposed calcarenite ridges from KP 6.0 to KP 11.2, 18.4 to KP 19.4, KP 21.3 to KP 23.1 and KP 23.9 to KP 24.6 prior to the earliest impacts to the calcarenite ridges. As Woodside is committed to avoiding dredging in these areas (see Section 7.2, **MA24**), the earliest impacts to the calcarenite

ridges will be the trunkline installation activities (see Section 3.5). Because the exposed calcarenite ridges were not identified as targets for direct inspection through any of the assessments conducted to date, direct inspection is not considered a risk-based management action required to adequately manage heritage risks. It is included as additional management action **MA33** in Section 7.2.

Direct inspection will be undertaken by ROV; use of divers will be avoided primarily due to the comparatively high risk to health and safety involved with these activities. A secondary benefit of ROV inspection is that it allows parties without diving experience or qualification, including Traditional Owners, to be directly involved in the observation and identification of heritage objects and values.

The ROV inspection will be conducted with the involvement of a suitably qualified expert in underwater and Indigenous cultural heritage who must also undertake an assessment of significance, possible impacts and mitigation options as per the process set out in Coroneos 2021. The identification of any heritage objects and values will be addressed through the adaptive management processes set out in Section 8.4.

5.6 Ministerial Statement Objectives

Ministerial Statement 1172 conditions Woodside to "Minimise direct and indirect impacts to social, cultural, heritage and archaeological values within and surrounding the Development Envelope, including from, but not limited to:

(a) disturbance of the ground that may impact Aboriginal Heritage Site, 19675 Holden Point Quarry A and accompanying conservation zone (known as 'Tool Shed') registered under the Aboriginal Heritage Act 1972;

(b) potential loss of access to areas to undertake traditional activities;

(c) indirect impacts, including visual and dust impacts to social and cultural places and activities; and

(d) disturbance of areas of volcanic rock in the sea bed."

Woodside will meet these objectives through the following commitments in relation to the scope of the Project for this CHMP:

(a) Woodside will not disturb ground in a manner that may impact Aboriginal Heritage Site, 19675 Holden Point Quarry A and accompanying conservation zone (known as 'Tool Shed') registered under the Aboriginal Heritage Act 1972. The Project will be conducted entirely within areas that have been disturbed and cleared and construction methodology does not involve any blasting that may impact this place

(b) There will be no loss of access for Traditional Custodians. Woodside will facilitate all reasonable requests for access by Traditional Custodians across and within all of the company's leases and operations and support Traditional Custodians to do so in a manner that meets Traditional Custodian, safety and operational requirements. Woodside will also invite, resource and support Traditional Custodians to monitor onshore works.

(c) Regarding social and cultural amenity:

1. There will be no post construction additional visual impact. The Project will be constructed and will operate in an area that has been previously cleared and there will be no recognisable change to visual amenity because the trunkline will be underground with little to no additional infrastructure within the already cleared Development Envelope on which significant industrial infrastructure is currently located for Woodside's Pluto operation. Existing operations and construction of a second LNG train are subject to CHMPs beyond this document.
2. There may be some temporary, localised and short-term impact to Traditional Custodians using and enjoying the Murujuga coastline through localised additional turbidity resulting from dredging.
3. There will be negligible if any additional noise arising from the Project over and able the ambient noise levels. The Project will be constructed and will operate in an existing heavily industrialised precinct.
4. There will be no impact to social and cultural amenity arising from dust. Strict dust control measures will be in place for the Project to protect the health and safety of the Project workforce, and dust barriers will be erected on the Site 19675 (Tool Shed) boundary fence to minimise the level of dust entering this area.
5. Further, construction of the Pluto Project caused no impact to Site 19675 (Tool Shed). The Scarborough Project then, that will employ less invasive construction methodologies (for example no blasting will take place) and will be constructed in the same location as Pluto, will not impact on this site.

(a) The Project will not disturb areas of volcanic rock on the sea bed.

5.7 Heritage Values

Extensive surveys and assessments have been conducted over the Pluto LNG Project leases including the Onshore Project Area. No tangible Aboriginal heritage exists within the Onshore Project Area. Independent expert analysis has advised that the Project poses nil to low risk of damaging any potential submerged archaeological Aboriginal heritage values, and poses no risk to submerged volcanic rock that is host to petroglyphs. However, the Project is situated within a significant cultural landscape.

Table 5-7 lists the heritage values that arise from the discussion in the Sections above, and summarises how the Project might interact with these values. The values have been set out according to a hierarchy model. For example, petroglyphs (A.1.a) are a subset of Tangible Heritage (A) and features with archaeological values (A.1). This hierarchy is intended only for simplicity in addressing this list where obvious overlaps exist—for example impacts to petroglyphs will necessarily include impacts to tangible heritage. It should not be taken as a classification of heritage, as it ignores the complexity and multi-faceted nature of heritage values—for example, petroglyphs may also have spiritual values (B.1) or National Heritage Values (E).

Table 5-7: Heritage features identified and Project interaction

Feature	Source	Project Interaction and Discussion
A Tangible Heritage	Aboriginal Heritage Act 1972; Aboriginal Cultural Heritage Act 2021; ATSIHPA; Draper et al. 2006; Heritage Act 2018.	No tangible heritage is located within the Onshore Project Area. Tangible Indigenous heritage exists outside of the Development Envelope. No tangible historic heritage is recorded onshore near the project. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage in the nearshore or offshore Development Envelope as low to nil. Shipwrecks are recorded near the Development Envelope, but no evidence of shipwrecks is visible in the geophysical data collected for the Project.
A.1 Features with scientific/archaeological values	Aboriginal Heritage Act 1972; Aboriginal Cultural Heritage Act 2021; Heritage Act 2018; Ministerial Statement 1172; Burra Charter; UCH Strategy; Murujuga Statement of Significance; National Heritage Values; Outstanding Universal Values; Draper et al. 2006;	No heritage with scientific or archaeological value is located within the Onshore Project Area. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage in the nearshore or Development Envelope as low to nil. Shipwrecks are recorded near the Development Envelope in Commonwealth waters, but no evidence of shipwrecks is visible in the geophysical data collected for the Project. One possible shipwreck was identified in a review of SSS data (Nutley 2022b) but has been assessed to be a natural feature.
A.1.a Petroglyphs	Murujuga Statement of Significance; National Heritage Values; Outstanding Universal Values; AHIS; Draper et al; O'Connor 2006; Mott 2019; McDonald and Phillips 2020	There are no petroglyphs within the Onshore Project Area. Petroglyphs exist outside of the Development Envelope, including at Site 19675 (Tool Shed) that will be avoided during the Project. Murujuga houses one of the largest, densest and most diverse collections of petroglyphs in the world. Petroglyphs are specifically valued for their National Heritage and proposed Outstanding Universal Values as described in Section 5.4.1. Seismic refraction conducted over the trunkline route did not identify any areas of igneous (volcanic) rock (the types of rocks on which Murujuga's petroglyphs are found) which would be impacted by the Project. Archaeological assessment of the submerged landscape (UWA 2021) concluded from this that "there is no potential threat from the development envelope to submerged rock art."
A.1.b Artefact scatters	Murujuga Statement of	There are no artefact scatters within the Onshore Project

Feature	Source	Project Interaction and Discussion
	Significance; AHIS; Draper et al. 2006; Mott 2019	Area. Artefact scatters exist outside of the Development Envelope, including at Site 19675 (Tool Shed) that will be avoided during the Project. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage such as artefact scatters in the nearshore or offshore Development Envelope as low to nil. This work also confirmed that four calcarenite ridges in Mermaid sound predate the earliest scientific evidence of human occupation of Australia and therefore would not contain artefacts cemented within them. Calcarenite features at the edge of the continental shelf are young enough that they may include artefacts, but these features are covered by modern sediments and marine growth, and the trunkline will be installed over this. These features are located in Commonwealth waters and are included here for completeness only.
A.1.b.i Site 19675 (Tool Shed)	Ministerial Statement 1172; AHIS; Draper et al. 2006; O'Connor 2006; Mott 2019; UWA 2020;	Site 19675 (Tool Shed) is not within the Development Envelope. This site contains petroglyphs and a dense assemblage of lithic artefacts, from which it derives its colloquial name, the "Tool Shed". Site 19675 is located outside of the Development Envelope beyond an existing fence and within a conservation zone. Pluto was designed to avoid this site, including a deviation to the LNG loading jetty. The Onshore Project Area is located within the Pluto disturbance footprint and therefore Site 19675 is not within the Onshore Project Area.
A.1.c Stone arrangements and structures	Murujuga Statement of Significance; National Heritage Values; Outstanding Universal Values; AHIS; Mott 2019; McDonald and Phillips 2020	There are no stone arrangements and structures within the Onshore Project Area. Stone arrangements are specifically valued for their National Heritage and proposed Outstanding Universal Values as described in Section 5.4.1. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage, including stone arrangements or structures, in the nearshore or offshore Development Envelope as low to nil. Review of SSS data (Nutley 2022b) concluded that "Apart from the Pluto pipeline, no other anomalies of potential cultural origin were detected in the SSS data. No indication of stone structures such as fish traps, or hut foundations could be detected in the inner reef, middle shelf or outer shelf areas."
A.1.c.i Fish Traps	Murujuga Statement of Significance; AHIS; MAC 2021	There are no fish traps within the Onshore Project Area. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage, including fish traps, in the nearshore or offshore Development Envelope as low to nil. Review of SSS data (Nutley 2022b) concluded that "Apart from the Pluto pipeline, no other anomalies of potential cultural origin were detected in the SSS data. No indication of stone structures such as fish traps, or hut foundations could be detected in the inner reef, middle shelf or outer shelf areas."
A.1.d Middens	Murujuga Statement of Significance; AHIS; Mott 2019; McDonald and	There are no middens within the Onshore Project Area. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential

Feature	Source	Project Interaction and Discussion
	Phillips 2020	archaeological Indigenous heritage such as middens in the nearshore or offshore Development Envelope as low to nil. This work also confirmed that four calcarenite ridges in Mermaid sound predate the earliest scientific evidence of human occupation of Australia and therefore would not contain midden material cemented within them. Calcarenite features at the edge of the continental shelf are young enough that they may include midden material, but these features are covered by modern sediments and marine growth, and the trunkline will be installed over this. These features are located in Commonwealth waters and are included here for completeness only.
A.1.d.i Shells	AHIS;	There are no shells within the Onshore Project Area. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage such as archaeologically significant shell material in the nearshore or offshore Development Envelope as low to nil. This work also confirmed that four calcarenite ridges in Mermaid sound predate the earliest scientific evidence of human occupation of Australia and therefore would not contain archaeologically significant shell material cemented within them. Calcarenite features at the edge of the continental shelf are young enough that they may include shell material with heritage significance, but these features are covered by modern sediments and marine growth, and the trunkline will be installed over this. These features are located in Commonwealth waters and are included here for completeness only.
A.1.e Grinding patches	Murujuga Statement of Significance; AHIS;	There are no grinding patches in the Onshore Project Area. Seismic refraction conducted over the trunkline route did not identify any areas of igneous (volcanic) rock (the types of rocks on which Murujuga's grinding patches are typically found) which would be impacted by the Project. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage, including grinding patches, in the nearshore or offshore Development Envelope as low to nil.
A.1.f Quarries	Murujuga Statement of Significance; AHIS; Mott 2019	There are no quarries in the Onshore Project Area Quarries exist outside of the Development Envelope, including at Site 19675 (Tool Shed) that will be avoided during the Project. Seismic refraction conducted over the trunkline route did not identify any areas of igneous (volcanic) rock or other geologies hard enough for tool production which would be impacted by the Project. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage, including quarries, in the nearshore or offshore Development Envelope as low to nil.
A.1.g Rock Shelters	Murujuga Statement of Significance; AHIS; Mott 2019	There are no rock shelters in the Onshore Project Area. Seismic refraction conducted over the trunkline route did not identify any areas of geology suitable for potential rock shelter formations which would be impacted by the Project. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage, including archaeological deposits within rock shelters, in the nearshore or offshore Development Envelope as low to nil.

Feature	Source	Project Interaction and Discussion
A.1.h Camp sites	AHIS;	There are no camp sites in the Onshore Project Area. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage, including camp sites, in the nearshore or offshore Development Envelope as low to nil.
A.1.i Modified trees	AHIS;	There are no modified trees in the Onshore Project Area. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage, including modified or scarred trees, in the nearshore or offshore Development Envelope as low to nil. Additionally, it is understood that trees would be highly unlikely to remain preserved on the seabed.
A.2 Burials	Aboriginal Cultural Heritage Act 2021; ATSIHPA; UCH Convention; AHIS;	There are no burials in the Onshore Project Area. A condition of the Pluto Site A's Ministerial Consent under Section 18 of the AHA required "remote sensing to be undertaken in coastal sandy areas and an archaeological analysis of its results, to further assess the possibility of locating Aboriginal burials. This work did not identify any burials within the coastal sandy areas and no previously undisturbed ground is within the current Onshore Project Area. Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage, including burials, in the nearshore or offshore Development Envelope as low to nil.
B Ethnographic sites	Aboriginal Heritage Act 1972; IFC GN8; AHIS; AIC 2006; O'Connor 2006; Mott 2019; McDonald and Phillips 2021;	Ethnographic surveys conducted for the Project did not identify any ethnographic sites within the Development Envelope, but did conclude ethnographic sites exist onshore outside of the Development Envelope (Mott 2019, McDonald and Phillips 2021). No impacts from the Project to ethnographic sites were foreseen during these consultations.
B.1 Features with spiritual values	Aboriginal Cultural Heritage Act 2021; Heritage Act 2018; UCH Convention; Burra Charter; Murujuga Statement of Significance; Outstanding Universal Values; AHIS;	Ethnographic surveys conducted for the Project did not identify any ethnographic sites within the Development Envelope, including nearshore or offshore, and including features with spiritual values. It was concluded, however, that ethnographic sites with spiritual values exist outside of the Development Envelope (Mott 2019, McDonald and Phillips 2021). No impacts from the Project to ethnographic sites were foreseen during these consultations.
B.1.a Songlines	Mott 2019; McDonald and Phillips 2021;	Ethnographic surveys conducted for the Project did not identify any ethnographic sites within the Development Envelope, including nearshore or offshore, and including songlines. It was concluded, however, that ethnographic sites and features connected to songlines exist outside of the Development Envelope (Mott 2019, McDonald and Phillips 2021). No impacts from the Project to ethnographic sites were identified during these surveys. Woodside notes that trunklines and other infrastructure including shipping channels already exist in close proximity to the proposed trunkline route, and if there were to be any impacts to surviving songlines these would be significantly more likely to be described as qualitative (i.e. "weaken" a songline) rather than binary or absolute (i.e. destroy a songline).
B.2 Features with social/cultural values	Aboriginal Cultural Heritage Act 2021; Heritage Act 2018; Ministerial	Ethnographic surveys conducted for the Project did not identify any ethnographic sites within the Development Envelope, including nearshore or offshore, and including features with specific social/cultural values. It was concluded,

Feature	Source	Project Interaction and Discussion
	Statement 1172; UNDRIP; Burra Charter; Murujuga Statement of Significance;	however, that ethnographic sites and features which may have social and cultural values exist outside of the Development Envelope (Mott 2019, McDonald and Phillips 2021). No impacts from the Project to ethnographic sites were identified during these surveys.
B.2.a Places for which access must be preserved	Ministerial Statement 1172; UNDRIP; AIC 2006; O'Connor 2006;	Ethnographic surveys conducted for the construction of the Pluto Project did include recommendations regarding the preservation of Traditional Custodian access to the landscape generally, and in particular to heritage sites within conservation zones. There will be no loss of access for Traditional Custodians. It is Woodside's policy to facilitate any request from Traditional Custodians to access sites for cultural reasons subject to safety and operational requirements.
B.2.b Places for which amenity must be preserved	Ministerial Statement 1172	Ethnographic surveys conducted for the construction of the Pluto Project and for the Scarborough Project did not identify any areas for which the preservation of amenity was requested, but it is understood that noise, smell, dust and other amenity impacts must be minimised wherever possible across Murujuga.
B.2.c Places for which privacy must be preserved	UNDRIP	Ethnographic surveys conducted for the construction of the Pluto Project and for the Scarborough Project did not identify any areas for which the preservation of privacy was requested. When requested, Woodside endeavours to give Traditional Custodians privacy when visiting heritage sites. This is however rarely constrained by safety considerations and Woodside's duty of care to any person while they are on a Woodside site (particularly in operational areas)
B.3 Features with aesthetic values	Aboriginal Cultural Heritage Act 2021; Heritage Act 2018; Burra Charter	Ethnographic surveys conducted for the construction of the Pluto Project and for the Scarborough Project did not identify any features for which aesthetic values were a particular priority for Traditional Custodians, but it is understood that visual and other amenity impacts must be minimised wherever possible across Murujuga
B.4 Features with historic values	Aboriginal Heritage Act 1972; Aboriginal Cultural Heritage Act 2021; Heritage Act 2018; Burra Charter; AHIS;	Archaeological assessment and ethnographic surveys conducted for the construction of the Pluto Project and for the Scarborough Project did not identify any features with historic values. There is no historic heritage in the Development Envelope. Shipwrecks are recorded near the Development Envelope but no evidence of shipwrecks is visible in the geophysical data collected for the Project. One possible shipwreck was identified in a review of SSS data (Nutley 2022b) but has been assessed to be a natural feature.
B.4.a Massacre sites	AHIS;	Ethnographic surveys conducted for the construction of the Pluto Project and for the Scarborough Project did not identify any Massacre sites within the Development Envelope. Locations associated with the Flying Foam Massacre are located outside of the Development Envelope.
B.5 Ceremonial places	UNDRIP; Murujuga Statement of Significance; AHIS;	Ethnographic surveys conducted for the construction of the Pluto Project and for the Scarborough Project did not identify any ceremonial places within the Development Envelope.
B.6 Hunting places	AHIS; McDonald and Phillips 2020	Ethnographic surveys conducted for the Scarborough Project did not identify any hunting places within the Development Envelope. Traditional Custodians fish along Murujuga. It is considered possible that Traditional Custodian enjoyment and amenity of fishing may be impacted during the construction period with

Feature	Source	Project Interaction and Discussion
		some localised and short-term turbidity expected
B.7 Meeting places	AHIS;	Ethnographic surveys conducted for the Scarborough Project did not identify any meeting places within the Development Envelope.
B.8 Named places	AHIS;	Ethnographic surveys conducted for the Scarborough Project did not identify any named places within the Development Envelope. Named places outside of the Development Envelope were recorded.
C Intangible Heritage	Aboriginal Cultural Heritage Act 2021; IFC GN8; Dhawura Ngilan; McDonald and Phillips 2020	Intangible cultural heritage is defined in the ICH Convention as: *The "intangible cultural heritage" means the practices, representations, expressions, knowledge, skills as well as the instruments, objects, artefacts and cultural spaces associated therewith that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.* MAC have separately defined "intangible heritage values" as: the non-material aspects of heritage that are valued, including cultural, spiritual, aesthetic and social aspects. Intangible heritage values are intergenerational and formed through interaction with the environment. Expressions of intangible heritage include practices, representations, expressions, knowledge, skills, traditions, practices, performance, use, knowledge and language. Ethnographic surveys conducted for the Scarborough Project did not identify any intangible heritage that would be impacted by the Project. Consultation with MAC has identified concerns about the movement of rocks to and from country as requiring consultation with representatives of other areas.
C.1 Living culture	IFC GN8; UNDRIP; Murujuga Statement of Significance;	Ethnographic surveys conducted for the Scarborough Project did not identify any aspects of living culture that would be impacted by the Project. The continuous living culture of Murujuga is a component of the Outstanding Universal Values proposed as a justification for World Heritage Listing.
C.1.a Customs	Aboriginal Cultural Heritage Act 2021; Murujuga Statement of Significance	Ethnographic surveys conducted for the Scarborough Project did not identify any customs or traditions that would be impacted by the Project. Consultation with MAC has identified concerns about the movement of rocks to and from country as requiring consultation with representatives of other areas.
C.1.b Stories	Murujuga Statement of Significance; AHIS; Mott 2019; McDonald and Phillips 2020	Ethnographic surveys conducted for the Scarborough Project noted that one or more songlines or creation stories originated off the coast of Murujuga (Mott 2019, McDonald and Phillips 2021) but were not able to confirm whether these passed through the Development Envelope. No impacts from the Scarborough Project to ethnographic sites were identified during these surveys.
C.2 Indigenous traditional knowledge	Dhawura Ngilan; UNDRIP; Murujuga Statement of Significance; Outstanding Universal Values	Ethnographic surveys conducted for the Scarborough Project did not identify any aspects of Indigenous traditional knowledge that would be impacted by the Project but did note that there was interest among elders and survey participants to understand what submerged landscape assessments could be undertaken. MAC was subsequently

Feature	Source	Project Interaction and Discussion
		involved in the UWA archaeological assessments.
C.2.a Animals of medicinal/food/economic value	UNDRIP; MAC 2021	MAC has identified dugongs as an important food source and also refers to fishing, crabbing, squidding and the collection of shellfish as important for Traditional Custodians. The primary means of reducing impact to the values of culturally significant flora and fauna are through the preservation of the environment in plans outside of this CHMP (i.e. DSDMP).
C.2.b Minerals of medicinal/food/economic value	UNDRIP;	No minerals with heritage values were identified through any heritage assessment conducted for the Project.
C.2.c Plants	AHIS; MAC 2021	MAC has identified sea grasses as an important habitat for dugongs, which are an important food source. No other plants of cultural value remain in the Development Envelope. The primary means of reducing impact to the values of culturally significant flora are through the preservation of the environment addressed in plans outside of this CHMP, including the DSDMP.
C.2.c.i Plants of medicinal/food/economic value	UNDRIP;	MAC has identified sea grasses as an important habitat for dugongs, which are an important food source. The primary means of reducing impact to the values of culturally significant flora and fauna are through the preservation of the environment addressed in plans outside of this CHMP (i.e. DSDMP).
C.2.c.ii Plants or animals of totemic value	MAC 2021	MAC identified whales as holding totemic importance. The primary means of reducing impact to the values of culturally significant flora and fauna are through the preservation of the environment addressed in plans outside of this CHMP (i.e. DSDMP).
C.2.c.iii Plants or animals of ecological value	Murujuga Statement of Significance; MAC 2021	MAC has made the following statement: *Elders were clear that all living things in Mermaid Sound are connected and important. It is the responsibility of MAC and the Elders to keep the environment safe. Mermaid Sound and Dampier Archipelago (Murujuga) is considered one place where the entire environment and all ecosystems hold both cultural and environmental value, with these types of values (cultural and environmental) being intrinsically linked.* In particular it was noted that seagrass, mangroves, microalgal communities, subtidal soft-bottom communities, intertidal sand, mudflats and rocky shores are important habitats for fish and coral reproduction. The primary means of reducing impact to the values of culturally significant flora and fauna are through the preservation of the environment addressed in plans outside of this CHMP (i.e. DSDMP).
C.2.c.iv Plants or animals of ceremonial value	MAC 2021	MAC 2021 identified whales and fish as holding ceremonial importance and having Thalu (increase) ceremonies associated with them, and turtles as having an associated ceremony. The primary means of reducing impact to the values of culturally significant flora and fauna are through the preservation of the environment addressed in plans outside of this CHMP (i.e. DSDMP).
C.2.c.v Plants or animals with connections to song lines	MAC 2021	MAC 2021 identified turtles as having connection to a songline originating inland and concluding at Murujuga. It was also noted by one Elder, however, that “Every animal has a song or story”. The primary means of reducing impact to the values of

Feature	Source	Project Interaction and Discussion
		culturally significant flora and fauna are through the preservation of the environment addressed in plans outside of this CHMP (i.e. DSDMP). Ethnographic surveys conducted for the Scarborough Project noted that one or more songlines or creation stories originated off the coast of Murujuga (Mott 2019, McDonald and Phillips 2021) but were not able to confirm whether these passed through the Development Envelope. No impacts from the Scarborough Project to ethnographic sites were identified during these surveys. Woodside notes that trunklines and other infrastructure including shipping channels already exist in close proximity to the proposed trunkline route, and therefore any impact to surviving songlines is significantly more likely to be qualitative (i.e. "weaken" a songline) rather than binary or absolute (i.e. destroy a songline.
C.2.c.vi Plants used for shelter	MAC 2021	MAC 2021 identified mangroves as a source of shelter. The primary means of reducing impact to the values of culturally significant flora and fauna are through the preservation of the environment addressed in plans outside of this CHMP (i.e. DSDMP).
D Heritage Landscapes	Aboriginal Cultural Heritage Act 2021; IFC GN8; UCH Strategy; Murujuga Statement of Significance; Outstanding Universal Values	Murujuga's cultural landscape is specifically valued for its: • age of occupation, • archaeological record, • cultural traditions, and • spiritual values. The specified values are not present in the wholly disturbed Onshore Project Area and this plan deals with mitigation of potential nearshore and offshore cultural heritage sites or values. No impacts to the values of Murujuga's cultural landscape is anticipated.
D.1 Conservation zones	Ministerial Statement 1172; AIC 2006; O'Connor 2006; Mott 2019	Conservation zones were established as part of the Pluto Project approvals to protect heritage features and values. There are no conservation zones in the Development Envelope. The Northern Conservation Zone, including Site 19675 (Tool Shed) is located in a conservation zone adjacent to and outside of the Onshore Project Area.
D.2 Volcanic rock on the seabed	Ministerial Statement 1172	Seismic refraction conducted over the trunkline route did not identify any areas of igneous (volcanic) rock (the types of rocks on which Murujuga's petroglyphs are found) which would be impacted by the Project. Archaeological assessment of the submerged landscape (UWA 2021) concluded from this that "there is no potential threat from the development envelope to submerged rock art."
D.3 Submerged calcarenite ridges	Mott 2019; UWA 2020;	Archaeological assessment of the submerged landscape (UWA 2021) confirmed that four calcarenite ridges in Mermaid sound predate the earliest scientific evidence of human occupation of Australia and therefore would not contain artefacts cemented within them. Calcarenite features at the edge of the continental shelf are young enough that they may include artefacts, but these features are covered by modern sediments and marine growth, and the trunkline will be installed over this. These features are located in Commonwealth waters and are included here for completeness only. These calcarenite ridges will be crossed by the trunkline.
D.4 Submerged hills	UWA 2020;	Archaeological assessment of the submerged landscape

Feature	Source	Project Interaction and Discussion
		(UWA 2021) identified submerged hills which may have archaeological or other heritage values, but these exist more than 10 km from the Development Envelope. The trunkline will not impact submerged hills. These features are located in Commonwealth waters and are included here for completeness only.
D.5 Water sources	AHIS;	There are no water sources within the Onshore Project Area. No water sources with heritage values were identified within the Development Envelope through any heritage assessment conducted for Scarborough. Consultation with Traditional Custodians identified No Name Creek as an area which should not be developed. No Name Creek lies outside of the Development Envelope and will not be impacted by the Scarborough Project Archaeological assessment of the submerged landscape (UWA 2021) identified a submerged river which may have archaeological or other heritage values but confirmed that the trunkline does not cross this feature.
D.5.a Rivers	UWA 2020; McDonald and Phillips 2020	There are no rivers within the Onshore Project Area. Consultation with Traditional Custodians identified No Name Creek as an area which should not be developed. No Name Creek lies outside of the Development Envelope and will not be impacted by the Scarborough Project Archaeological assessment of the submerged landscape (UWA 2021) identified a submerged river which may have archaeological or other heritage values but confirmed that the trunkline does not cross this feature. Review of SSS data (Nutley 2022b) concluded that "In the middle shelf and outer shelf there were no indicators of former riverbeds, creek lines or lakes with which [any archaeological] feature may be associated."
D.5.b Springs	UWA 2020;	There are no springs within the Onshore Project Area. No water sources with heritage values, including springs, were identified within the Development Envelope through any heritage assessment conducted for Scarborough.
D.6 Peat beds	Nutley 2022a	Geotechnical has not identified any peat beds in the near shore or offshore Development Envelope or broader landscape. Peat beds do not exist in the Onshore Project Area.
D.7 Protected Areas	Aboriginal Heritage Act 1972; Aboriginal Cultural Heritage Act 2021; Maritime Archaeology Act 1973; EPBC Act; UCHA; UCH Strategy	There are no designated protected areas within the Development Envelope including: • Protected areas declared under Sections 19 or 20 of the AHA, • Protected areas declared under Part 4 of the ACHA, • Protected zones declared under Section 9 of the Maritime Archaeology Act 1973, • Protected zones declared under Part 2, Division 2 of the UCHA, • National Heritage Places, or • World Heritage Areas. The Project is located outside of the Burrup Peninsula National Heritage Place.
E Features with National Heritage Values	EPBC Act; Murujuga Statement of Significance; National Heritage Values	The Project is located outside of the Burrup Peninsula National Heritage Place (NHP). The listed heritage values of the NHP relate to the archaeological and scientific values of the petroglyphs and stone structures on the peninsula, and are therefore not impacted by access restrictions, turbidity in

Feature	Source	Project Interaction and Discussion
		nearby waters or other such pathways. Nevertheless, Woodside recognises that these features may have other values and that heritage outside of the NHP may hold similar values; in particular, petroglyphs, stone arrangements and the heritage landscape are considered separately in this table.
F Features with Outstanding Universal Values	EPBC Act; Murujuga Statement of Significance; Outstanding Universal Values	Outstanding Universal Values have been proposed for the Murujuga Cultural Landscape, although World Heritage Listing has not yet been ascribed to this landscape. It is understood that the proposed World Heritage boundary does not overlap the Development Envelope.
G Submerged heritage	Maritime Archaeology Act 1973; Underwater Cultural Heritage Act 2018; Murujuga Statement of Significance; Mott 2019;	Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage in the nearshore or offshore Development Envelope as low to nil. Shipwrecks are recorded outside of the Development Envelope but not within the Development Envelope. One possible shipwreck was identified in a review of SSS data (Nutley 2022b) but has been assessed to be a natural feature. This review concluded that “Apart from the Pluto pipeline, no other anomalies of potential cultural origin were detected in the SSS data. No indication of stone structures such as fish traps, or hut foundations could be detected in the inner reef, middle shelf or outer shelf areas. In the middle shelf and outer shelf there were no indicators of former riverbeds, creek lines or lakes with which such feature may be associated.” Ethnographic surveys conducted for the Scarborough Project by Traditional Custodians did not identify any ethnographic sites within the Development Envelope, including nearshore or offshore. No impacts from the Project to submerged heritage were identified during these surveys.
G.1 Shipwrecks	Maritime Archaeology Act 1973; Underwater Cultural Heritage Act 2018; Australasian Underwater Heritage Database	The Australasian Underwater Heritage Database and WA Museum’s Maritime Archaeology shipwreck database has been consulted (see Section 5.4.4). Shipwrecks are recorded outside of the Development Envelope but not within the Development Envelope. It is acknowledged that the locations recorded for these wrecks appear to be unreliable. Geophysical data within the trunkline route has been assessed for evidence of any shipwrecks. One possible shipwreck was identified in a review of SSS data (Nutley 2022b) but has been assessed to be a natural feature. There is no further information available on the location of these wrecks, and no evidence that they exist within the Development Envelope.
H Features with values to neighbouring groups	Dhawura Ngilan; IFC GN8; National Heritage Values; Outstanding Universal Values	The value of any heritage on Murujuga to neighbouring groups is secondary to it values to Murujuga’s Traditional Custodians. Woodside remains committed to supporting MAC to undertake ethnographic consultation with neighbouring groups. Consultation with MAC has identified concerns about the movement of rocks to and from country as requiring consultation with representatives of other areas.

6 Impact Assessment

As demonstrated through the assessments detailed in Section 5.5 and interactions identified in Table 5-7:

- no tangible heritage exists in the Onshore Project Area,
- Site 19675 (Tool Shed) and (within the broader landscape) other heritage features and values are located outside of the Development Envelope and require management actions to protect them in situ,
- flora and fauna with cultural or spiritual values, which may relate to tangible or intangible aspects of the environment, have been identified in relation to their role as part of a connected ecosystem,
- no other tangible heritage has been identified in the Nearshore Development Envelope, and likelihood of impacts to Indigenous archaeological heritage is considered low to nil, and
- intangible values have been identified generally in the landscape, but not identified within the Development Envelope.

While outside the scope of this CHMP, details of Offshore heritage values are included for completeness and at the request of MAC. No impacts to offshore heritage values are anticipated but are beyond the scope of this CHMP. Management of the ecological and environmental quality of Mermaid Sound and Murujuga is captured in environmental management plans for the Scarborough Project, and in particular the DSDMP. Cultural values associated with the presence and survival of marine fauna, including those identified in Appendix B, are considered to be preserved where impacts to species populations are avoided, as managed through the DSDMP and other environmental plans.

Without appropriate management actions a range of potential impacts are possible. The activities set out in Section 3 have been assessed against all identified heritage values in Section 5.7 to identify potential impacts and inform the development of risk-based management actions. This assessment is summarised in Appendix B. The avoidance of impacts to heritage features and values will be managed by the effective implementation of cultural heritage management actions, management targets, monitoring and reporting as per Condition 7-3 of Ministerial Statement 1172 and detailed in Table 7-1.

7 Management of Cultural Heritage

Activities in Section 3, without effective controls in place, have the potential to impact heritage values. Based on the assessments in Section 5.5, confining these activities to the Development Envelope significantly reduces the risk of these impacts due to the absence of known heritage values and low likelihood of undiscovered sites. Activities with residual potential to impact heritage should be managed in accordance with the hierarchy of controls. In order of effectiveness, the following categories of control should be applied to reduce any risk of impact:

- Elimination of the activity;
- Substitution with a lower risk activity that achieves the same outcome;
- Prevention or reduction of impacts;
- Detection of impacts early to limit any damage;
- Control of the activity to minimise or limit the extent of damage;
- Mitigation or restoration of any damage that occurs; and
- Emergency response or remediation.

7.1 Cultural Heritage Management Framework

Risk based management actions have been developed to reduce the already unlikely risk of any impact to cultural heritage values arising from the Project. These Management Actions are set out in Table 7-1.

Table 7-1: Social Surroundings management actions, management targets, monitoring and reporting

EPA Factor: Social Surroundings

Environmental Objectives:

- Protect heritage places, sites and activities and habitats so that known or discovered heritage values are not impacted.
- Condition 7-1 (1) of Ministerial Statement 1172: Minimise direct and indirect impacts to social, cultural, heritage and archaeological values within and surrounding the Development Envelope including from, but not limited to:
  - disturbance of the ground that may impact Aboriginal Heritage Site, 19675 Holden Point Quarry A and accompanying conservation zone (known as 'Tool Shed') registered under the Aboriginal Heritage Act 1972;
  - potential loss of access to areas to undertake traditional activities;
  - indirect impacts, including visual and dust impacts to social and cultural places and activities; and
  - disturbance of areas of volcanic rock in the sea bed.

Management Actions	Management Targets	Monitoring	Reporting	Responsibility	Timing	Contingency
MA1: Onshore construction activities will be confined to the Onshore Project Area, which: • was previously cleared • excludes all established protected areas and conservation zones • heritage assessments have been conducted over • does not contain any tangible Indigenous heritage, known intangible Indigenous heritage, or historic heritage	Onshore construction activities limited to the Onshore Project Area	Delineations (per MA4) in place. Management of personnel and plan movement by Woodside and Contractor site representatives.	Report of a post-works audit of the Onshore Project Area undertaken by a qualified archaeologist.	Woodside and Contractor	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA2: Nearshore activities will be confined to the Development Envelope, which: • excludes all established protected areas and conservation zones • heritage assessments have been conducted over • does not contain any known Indigenous or historic heritage, including shipwrecks • has been assessed by independent experts as having low to nil risk of archaeological Indigenous heritage values	All nearshore activities limited to the Development Envelope.	Monitoring of vessel location through GPS and navigation systems	Vessel and dredging logs provided in the event of non-compliance.	Contractor	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.

Management Actions	Management Targets	Monitoring	Reporting	Responsibility	Timing	Contingency
MA3: Seabed intervention activities (excluding anchoring/BHD spud placement) will be confined to the Trunkline Indicative Footprint Corridor, which: • excludes all established protected areas and conservation zones • heritage assessments have been conducted over • does not contain any known Indigenous or historic heritage, including shipwrecks • has been assessed by independent experts as having low to nil risk of archaeological Indigenous heritage values	All seabed intervention (excluding anchoring/BHD spud placement) is limited to the Trunkline Indicative Footprint Corridor.	Monitoring of vessel location through GPS and navigation systems	Post works bathymetric survey.	Contractor	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA4: Onshore Project Area will be clearly delineated, utilising existing fence lines and installation of temporary fencing or other means of physical demarcation where feasible (e.g. bollards and signage).	Onshore Project Area clearly delineated	N/A	Report of a pre-works audit of the Onshore Project Area undertaken by a qualified archaeologist.	Woodside	Prior to ground disturbing activities	Rectification of physical boundary Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA5: Woodside's "Chance Finds Procedure" as described in Section 8.4.2 will be employed in the event of a discovery of Indigenous heritage features, suspected Indigenous heritage features or human remains.	Compliance with Woodside's Chance Finds Procedure, documented in Section 8.4.2.	N/A	Records of Chance Finds Procedure implementation.	Woodside and Contractor	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA6: Unplanned impacts to Indigenous heritage features will be communicated to Traditional Custodians as soon as possible and remediation actions agreed and implemented.	Traditional Custodians notified of all unplanned impacts. Remediation actions agreed and implemented with Traditional Custodians.	N/A	Written correspondence. Records of agreed remediation actions.	Woodside and Contractor	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA7: All Project personnel will undertake online or in-person Cultural Awareness Training	All Project personnel completed Cultural Awareness Training	Review of personnel training and inductions	Records of training completion	Woodside and Contractor	Contractor onboarding	Non-compliant personnel to complete online Cultural Awareness Training
MA8: Dust suppression methods such as sprinkler systems may be used on unsealed roads, stockpiles and in excavation or works areas within the Onshore Project Area if excessive dust (markedly above ambient conditions) is generated.	If excessive dust (markedly above ambient conditions) is generated within the Onshore Project Area, dust suppression methods implemented.	Visual assessment	Records demonstrate dust suppression implemented if excessive dust identified through visual assessment onsite.	Contractor	During onshore ground disturbance activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA9: Dust-suppressing cloth will be applied to appropriate fencing near Site 19675 (Tool Shed).	Dust-suppressing cloth applied to appropriate fencing near Site 19675.	N/A	Report of a pre-works audit of the Onshore Project Area undertaken by a qualified archaeologist.	Woodside	Prior to ground disturbing activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA10: Project inductions include control measures and training for Project personnel in dust emissions and control.	All relevant Project personnel completed Project inductions covering dust emissions and control.	Review of personnel training and inductions	Training records verify relevant Project personnel have completed Project inductions covering dust emissions and controls	Contractor	Contractor onboarding	Investigation into non-compliance conducted by Woodside and corrective actions implemented.

Management Actions	Management Targets	Monitoring	Reporting	Responsibility	Timing	Contingency
MA11: All loose material onshore must be suitably stored or secured to prevent being blown beyond the Onshore Project Area.	No material from construction blown beyond the Onshore Project Area.	Visual assessment. Ongoing housekeeping.	Report of a post-works audit of the Onshore Project Area undertaken by a qualified archaeologist.	Contractor	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA12: No activity or material, particularly fencing, will obstruct access to land that would otherwise be available to the public.	Public access to land not impacted by the onshore construction activities.	N/A	Report of a pre- and post-works audits of the Onshore Project Area undertaken by a qualified archaeologist.	Woodside	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA13: Murujuga Aboriginal Corporation will be notified of the Project commencement date.	Murujuga Aboriginal Corporation notified of Project commencement date.	N/A	Written notification.	Woodside	Prior to start of works	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA14: Murujuga Aboriginal Corporation and any other Indigenous stakeholder determined to be appropriate, will be notified of any activity that may materially impact the amenity or enjoyment of land or waters that are available to the public, including through noise, dust or vessel exclusion zones.	Appropriate Indigenous stakeholders notified of any activity that may materially impact amenity or enjoyment of public land and waters.	N/A	Written notification.	Woodside	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA15: Dredges, Split Hopper Barges and rock installation vessels will be positioned using a Global Navigation Satellite System (GNSS) within approved Project Areas prior to and during trenching, spoil disposal, backfill and rock placement activities.	No trenching, spoil disposal, backfill and rock placement activities to occur outside of the approved Project Areas.	Survey of vessel location	Pre and post trenching, spoil disposal, backfill and rock placement bathymetric surveys	Contractor	Trenching, spoil disposal, backfill and rock placement activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA16: Trailing Suction Hopper Dredge drag head will be positioned using a Global Navigation Satellite System (GNSS) within approved Project Areas prior to and during trenching and backfill activities.	No trenching and backfill to occur outside of approved Project Areas.	Survey of vessel location	Dredging logs show that the TSHD drag head was positioned within approved Project Areas prior to and during trenching and backfill activities	Contractor	Trenching and backfill activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA17: Designated 'No dredge' out of zone alarms will be installed and used on the dredging vessel navigation system	No trenching and backfill activities to occur outside of the approved Project Areas.	Pre and post trenching, backfill and rock placement bathymetric surveys	Inspection verifies zone alarms in place	Contractor	Throughout trenching activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.

Management Actions	Management Targets	Monitoring	Reporting	Responsibility	Timing	Contingency
MA18: Anchoring procedures will be implemented to guide setting of anchors for the Shallow Water lay barge, including: • Accurate positioning of anchors • Prevention of excessive anchor wire drag on the seabed by ensuring sufficient tension is maintained during anchor running operations • Anchoring equipment certification (winches, anchor wires and associated hardware) • Anchor installation as per mooring design analysis • Anchoring within 750m either side of the trunkline route centreline	Anchoring procedures developed and implemented for SWLB.	Pre- and post-SWLB activities bathymetric surveys	Progress reports confirm anchoring alignment.	Contractor	SWLB activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA19: Design of installed infrastructure will not obstruct access to land or navigation of waters that would otherwise be available to the public.	Traditional Custodian access to land and waters not impacted by project design.	N/A	Report of a post-works audit of the Onshore Project Area undertaken by a qualified archaeologist. Pre- and post- SWLB activities bathymetric surveys	Woodside	Ongoing	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA20: Trunkline will be placed on the seabed within the Project Area using positioning technology.	Trunkline is laid in the designated area.	Trunkline touchdown point is monitored where water depth and visibility allow.	Pre- and post- SWLB activities bathymetric surveys	Contractor	Ongoing	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA21: A company approved pipelay installation procedure will be in use which includes: • Alarm systems for dynamic positioning to indicate loss of vessel position • A buckle monitoring system and certified anchor winch system will be in use • Minimum tensioner alarms to ensure trunkline catenary is maintained • Pipelay monitoring system	Trunkline is laid in the designated area. In compliance with design criteria.	Monitoring by Woodside representatives on vessel	Vessel logs	Contractor	Pipelay	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA22: Backfill sediments will only be sourced from designated borrow grounds.	No backfill sediments sourced from outside designated borrow grounds.	N/A	Dredging logs show that the TSHD drag head was positioned within designated borrow ground prior to and during borrow ground dredging	Contractor	Backfill	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA30: Dredging depth at the features identified as potential 5m deep catch points between KP 18.54 and KP 19.8 will avoid the lower half of these catch points (i.e. below 2.5m).	Dredging depth at the features identified as potential catch points between KP 18.54 and KP 19.8d is limited to the upper half of these catch points (i.e. at or above 2.5m).	Dredge depth monitored by hydrographic survey.	Dredging logs	Contractor	Throughout trenching activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA31: Where rock used for backfill is sourced from beyond Murujuga (e.g. Mount Regal quarry), Woodside will support any engagement required between	Woodside supports any engagement between MAC or other Traditional Custodians regarding the movement of any rock used for backfill between	Records for any request for support and support given are maintained by Woodside.	Report of a post-works audit of the Onshore Project Area undertaken by a qualified archaeologist.	Woodside	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.

Management Actions	Management Targets	Monitoring	Reporting	Responsibility	Timing	Contingency
MAC and other Traditional Custodians if such engagements proceed.*	Country if such engagements proceed. Such consultations are led by MAC as the Traditional Custodians of Murujuga.					
MA32: Rocks removed from the shore crossing area will be retained on the peninsula of Murujuga.	Rocks removed from the shore crossing are retained on the peninsula of Murujuga.	N/A	Report of a post-works audit of the Onshore Project Area undertaken by a qualified archaeologist.	Woodside	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA35: Where rock used for backfill is sourced from beyond Murujuga (e.g. Mount Regal quarry), Woodside will notify representatives of Traditional Custodians that the rock material is being used at Murujuga or in nearshore areas to enable them to conduct any necessary engagements under traditional law.	Woodside notifies representatives of Traditional Custodians of any quarry location that of rock material being used at Murujuga or in nearshore areas.	Written records maintained of notification to Traditional Custodians.	Written records of correspondence with Traditional Custodians.	Woodside	Prior to backfill activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.

* MAC advised in a meeting on 27 October 2022 that this meeting must be held between MAC's CEO and Ngarluma Aboriginal Corporation's Heritage Officer.

7.2 Additional Commitments

During consultation with Traditional Custodians, a number of additional actions were discussed and, where practical, agreed. Where these are considered to be risk-based, these have been incorporated in Table 7-1 as management actions. The remaining commitments are not considered risk-based but are set out in Table 7-2 and must be implemented to provide peace-of-mind to Traditional Custodians, comply with Woodside processes and procedures around Indigenous-led heritage management, and respect the cultural responsibilities and obligations of Indigenous stakeholders to manage Country beyond the prescriptions of regulatory approvals.

Additionally, national and international guidance in Section 2.4.5 have also been considered in the development of mitigations as set out in Appendix C. No additional mitigations were identified as necessary through this process, but the importance of existing Management Actions was reinforced.

Table 7-2: Additional management actions, management targets, monitoring and reporting

Objectives:

- Comply with Woodside processes and procedures around Indigenous-led heritage management
- Respect the cultural responsibilities and obligations of Indigenous stakeholders to manage Country beyond the prescriptions of regulatory approvals

Management Action	Management Target	Monitoring	Reporting	Responsibility	Timing	Contingency
MA23: Woodside Energy will provide MAC with footage from the dredge vessels during dredging activities	MAC provided with footage from the dredge vessels during dredging activities	Records maintained of delivery of all footage	Written correspondence	Woodside	Dredging activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA24: Dredging will not be conducted in the following areas, associated with exposed calcarenite ridges: • KP 6.0 to KP 11.2 • KP 18.4 to KP 19.4 • KP 21.3 to KP 23.1 • KP 23.9 to KP 24.6	No dredging conducted in • KP 6.0 to KP 11.2 • KP 18.4 to KP 19.4 • KP 21.3 to KP 23.1 • KP 23.9 to KP 24.6	Monitoring of vessel location through GPS and navigation systems	Post works bathymetric survey.	Contractor	Dredging activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA25: A sample of subsurface dredged calcarenite will be made available to MAC for analysis.	A sample of subsurface dredged calcarenite is made available to MAC for analysis.	Records maintained of delivery of dredged material	Written correspondence	Woodside	Dredging activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA26: MAC-appointed Traditional Custodians will be invited to attend on-shore construction works to ensure agreed Management Actions are being implemented.	MAC-appointed Traditional Custodians invited to attend on-shore construction works to ensure agreed Management Actions are being implemented.	Woodside to maintain records of invitations sent to MAC	Written correspondence	Woodside	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA27: MAC will be offered opportunities to visit dredge and rock-placement vessels.	MAC offered opportunities to visit dredge and rock-placement vessels.	Woodside to maintain records of invitations sent to MAC	Written correspondence	Woodside	Dredging and rock placement activities	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA28: Rock Art will not be disturbed or relocated.	Rock Art is not disturbed or relocated.	Monitoring through Woodside and Contractor site representatives.	Report of a post-works audit of the Onshore Project Area undertaken by a qualified archaeologist.	Woodside and Contractor	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.
MA29: Personnel and activities, including anchoring, are not permitted at the sandy beaches immediately north and south of the shore crossing.	No personnel access or activities, including anchoring, at the sandy beaches immediately north and south of the shore crossing.	Monitoring through Woodside and Contractor site representatives. Monitoring of vessel location through GPS and navigation systems Anchoring procedures as per **MA18**	Progress reports confirm anchoring alignment. Vessel and dredging logs and/or investigation report (as appropriate) provided in the event of non-compliance.	Woodside and Contractor	Throughout construction	Investigation into non-compliance conducted by Woodside and corrective actions implemented.

MA33: Woodside must complete ROV survey of the trunkline centreline over the exposed calcarenite ridges: KP 6.0 to KP 11.2, KP 18.4 to KP 19.4, KP 21.3 to KP 23.1 and KP 23.9 to KP 24.6. The work will be completed on direction from a suitably qualified expert in underwater and Indigenous cultural heritage. The expert will also undertake an assessment of significance, possible impacts and mitigation options.	ROV survey of the trunkline centreline completed over the exposed calcarenite ridges: KP 6.0 to KP 11.2, KP 18.4 to KP 19.4, KP 21.3 to KP 23.1 and KP 23.9 to KP 24.6. The work will be completed on direction from a suitably qualified expert in underwater and Indigenous cultural heritage. The expert will also undertake an assessment of significance, possible impacts and mitigation options.	Survey conducted with suitably qualified expert.	Summary of results, significance and impact assessment.	Woodside and heritage expert	Prior to first impact in the area (trunkline installation)	Postpone trunkline installation over exposed calcarenite ridges and implement ROV survey.
MA34: Woodside will support additional ethnographic survey work to be undertaken by MAC as agreed with MAC and outlined in Section 5.5.9, subject to MAC undertaking the works.	Woodside support provided to Phase II ethnographic works, aligned to agreed scope and purpose, subject to MAC undertaking the works.	Woodside responses to MAC notification of intent to conduct survey and notification of support required. Where ethnographic work has been conducted, records of payments to cover survey costs.	Summary of survey results, if conducted. Records of meeting of Heritage Management Committee described in Section 8.4.1 where survey identifies values that may require additional management	Woodside	Upon MAC scheduling Phase II survey work	Retrospective reimbursement of costs and provision of requested support.

7.3 Further Details of Management Actions

Further information and procedures for some of these management actions are provided below where deemed necessary. Additional queries regarding heritage management or workers' obligations from staff or contractors implementing this plan should be directed to Woodside's Heritage Adviser.

7.3.1 Definition of Development Envelope, Onshore Project Area and Construction Footprint

Relevant management actions: MA1, MA2, MA3, MA4, MA11.

The Development Envelope is defined in Ministerial Statement 1172 and is the whole area to which the Ministerial Statement applies.

The Onshore Project Area is the portion of the Development Envelope which is located onshore.

The Trunkline Indicative Footprint Corridor is the area in nearshore waters in which dredging is permissible, being a corridor along the centre of the Development Envelope with an average width of approximately 30m.

Existing roads and access tracks, including public roads and roads within the Pluto LNG Plant, are not considered part of the Development Envelope or Onshore Project Area for the purposes of this CHMP. However, nothing in this CHMP shall prevent the use of existing roads and access tracks for movement of vehicles, equipment, personnel or materials.

State, Commonwealth and International Waters which vessels may travel across are not considered part of the Development Envelope for the purposes of this CHMP unless within areas specified above. However, nothing in this CHMP shall prevent the navigation of Project vessels through these waters.

7.3.2 Onshore Project Area Delineation

Relevant management actions: MA4, MA9, MA12.

Temporary fencing will be established between the Onshore Project Area and Site 19675 (Tool Shed). Where ground disturbance is required to establish these fences, this disturbance will be confined to previously disturbed ground and in the presence of Traditional Custodian monitors. Monitors will be engaged as described in Section 7.3.6.

These fences serve to visually delineate the extent of the Onshore Project Area to prevent unauthorised access to Site 19675. Where existing fences are in place, these will be used. Dust management at this site will require the suspension of dust-suppressing cloth, which will be attached to these fences.

7.3.3 Dredging Exclusion Areas

Relevant management action: MA3, MA15, MA16, MA17, MA24.

The Development Envelope crosses four areas of exposed calcarenite in Mermaid Sound associated with ancient shorefronts prior to the rise of sea levels to their current positions. The Project was designed to avoid dredging in these areas for engineering reasons, though early heritage assessments (Section 5.5.2) also identified these features as being archaeologically prospective due to the potential for "midden and artifacts within cemented dunes".

The site formation process that was theorised to potentially apply in these areas can be summarised as follows:

1. Indigenous people would have used and occupied the shore front, leaving archaeological material such as stone tools or midden sites.
2. Sand dunes that built up along this shore front may have covered this material.

3. Over time, geological processes solidified these dunes into calcarenite rock, trapping archaeological material in situ and preserving it from the disturbance caused by rising sea levels.
4. The artefacts remain trapped within these calcarenite formations below the seabed surface but would be disturbed by any dredging or other seabed disturbing activities.

Subsequent archaeological analysis, including radiometric dating (Section 5.5.3), was conducted on coral and other material from these calcarenite features which had been recovered through coring conducted for the neighbouring Pluto trunkline. This analysis concluded that the calcarenite ridges formed prior to the oldest scientific evidence of human occupation of the Australian continent, and therefore the above site formation process would not have occurred.

As a result, Woodside does not believe it is necessary to avoid dredging in these areas. However, it remains preferable from an engineering perspective to lay the trunkline over the calcarenite, and MAC have requested through consultation (Section 4) that these features not be dredged.

Woodside has therefore committed under MA24 not to dredge in the following areas:

- KP 6.0 to KP 11.2
- KP 18.4 to KP 19.4
- KP 21.3 to KP 23.1
- KP 23.9 to KP 24.6

7.3.4 Heritage Site Avoidance

Relevant management actions: MA1, MA2, MA3, MA4, MA15, MA16, MA17, MA29.

All activities with the potential to impact heritage values will be confined to land or waters over which industry-standard (or better) heritage assessments have been undertaken (Section 5.5) and which on which no sites are known to exist. The Onshore Project Area is located on land that was cleared as part of the Pluto LNG Project. No tangible heritage remains in this area.

If information arises indicating the existence of new heritage sites or values, this will be addressed through the adaptive nature of this CHMP (Section 8.4).

7.3.5 Non-Obstruction of the Landscape

Relevant management actions: MA12, MA14, MA19.

Although no heritage surveys, assessments or consultation have indicated any heritage values would be impacted by restrictions on access, as a matter of good practice and impact minimisation Woodside has committed through the relevant management actions to minimise disruptions to traditional land use.

This includes confining onshore construction to the Onshore Project Area within previously cleared land for which existing access restrictions exist. Onshore activities will not increase limitations on public (including Traditional Custodian) access to land.

Where operational requirements for nearshore or offshore activities include exclusion zones around vessels, these temporary restrictions will be communicated to MAC and, where appropriate, other Traditional Custodians to ensure minimal disruption to cultural activities.

7.3.6 Heritage Monitoring

Relevant management actions: MA23, MA25, MA26, MA27.

No onshore disturbance of new ground is anticipated under the current Project design or permitted under this CHMP. However, it is accepted that it is a requirement of existing approvals for Pluto LNG (Section 2.3) and expectations of Traditional Custodians that if any onshore disturbance of new ground were required that heritage monitors would be required.

All onshore ground disturbance for the Project will occur in previously disturbed ground and therefore does not include any regulatory requirement for heritage monitors to be present, and heritage monitoring will not provide any practical advantage in managing heritage. However, at MAC's request through consultation on this CHMP, Woodside has committed through MA26 to ensuring MAC-appointed monitors are able to access site and will be invited to monitor works.

MAC also requested through consultation that Traditional Custodians monitor dredging activities from aboard operational vessels. However, the quantity and speed of planned dredging activities is such that visual monitoring of the dredging is not considered a meaningful mitigation activity. Unlike onshore monitoring, a number of practical limitations prevent accommodating this request including vessel sleeping capacity, safety risk minimisation and access to vessels. Woodside has committed through MA27 to facilitate visits to the heritage vessel for MAC-appointed monitors and other representatives.

Woodside has also accepted MAC's request to provide video footage of the dredging activities in as-near-to-real-time as practicable. Woodside will be guided by MAC's advice on whether the footage should be provided as saved files or as a live feed, which will have a negative impact on the video quality. Because visual monitoring of the dredging is not considered a meaningful mitigation activity a loss of footage, poor video quality or similar issues with the deliverable does **not** constitute an incident under this CHMP or a breach of any management action.

Where the process for engaging monitors or other participants for these activities is prescribed by regulatory approvals or existing agreements, this process must be followed. Where it may be otherwise appropriate to do so, monitors will be engaged through MAC at a standard heritage rate.

7.3.7 Subsurface Calcarenite Sampling

Relevant management action: MA25.

At MAC's request, to assist in ground-truthing the assessments conducted to date and enhance stakeholder knowledge and understanding of the submerged landscape, Woodside has committed to collecting a sample of dredged subsurface calcarenite which will be brought to shore for MAC to analyse.

The location of this sample will be informed by further conversation with MAC.

Analysis of this sample for archaeological material will be managed by MAC with resourcing for appropriate archaeological expertise to be agreed between Woodside and MAC.

8 Implementation Strategy

8.1 Roles and responsibilities

Woodside and its Contractors will assign suitable resources to oversee the implementation of this CHMP. Key roles and responsibilities are summarised in Table 8-1. Where responsibility is assigned to a role, the task may also be performed by a suitable delegate.

Table 8-1: Key roles and responsibilities in context of the CHMP

Role	Key Responsibility
Woodside Scarborough Project Manager	• Manage the activity so it is undertaken as per the relevant standards and commitments in this CHMP. • Communicate with the Contractor • Notify the Woodside Environment Adviser of any scope changes in a timely manner. • Liaise with regulatory authorities as required. • Review this CHMP as necessary and manage change requests. • Confirm all Project and support vessel crew members complete trainings and inductions as specified in Section 8.2. • Verify that contractors meet heritage related contractual obligations. • Confirm incident reporting meets regulatory and Woodside requirements.
Contractor Project Manager(s)	• Responsible for Project compliance and implementation CHMP, including tracking compliance (in relation to any Management Action or activity that requires, whether expressly stated in this plan or not, contractor involvement to ensure Project compliance with this CHMP)
Woodside Heritage Adviser	• Track compliance with the in force CHMP and applicable approvals • Assist with the review, investigation and reporting of heritage incidents. • Ensure monitoring and inspections/audits are undertaken as per the requirements of this CHMP. • Liaise with relevant regulatory authorities as required. • Perform external reporting of any heritage related incidents/events • Monitor and close out corrective actions identified during monitoring or audits. • Provide advice to relevant Woodside personnel and contractors to assist them to understand their cultural heritage responsibilities. • Liaise with contractors to ensure communication and understanding of requirements as outlined in this CHMP • Perform ongoing consultation with Traditional Custodians throughout the Project
Woodside Client Representative	• Oversee implementation of the in force CHMP in the field • Participate in inspections and audits • Participate in incident investigations
Construction Personnel	• Comply with the requirements set out in this CHMP • Ensure all personnel are aware of their responsibilities under this CHMP through a training and induction program • Participate in inspections and audits • Report on non-compliances and incidents • Participate in incident investigations • Ensure personnel are competent to undertake the work they have been assigned. • Ensure vessels and equipment are appropriately maintained and operated to prevent risk of incidents

8.2 Training and induction

8.2.1 General Induction

As part of standard site induction, all personnel subject to this CHMP will be made aware of their obligations Including those set out in Table 8-1.

8.2.2 Cultural Awareness Training

Cultural awareness training provided by MAC will form part of the induction and onboarding process for all employees and contractors working on Scarborough. Effective implementation of this CHMP and heritage management requires staff to understand how individual tasks and responsibilities must be managed to protect and manage cultural heritage. This will be achieved through an online CAT package developed by MAC, and through on-Country CAT provided by rangers from MAC's Land and Sea Unit as applicable under existing agreements.

All employees and contract personnel, subcontractors and other service providers supporting the Scarborough Project who have or are proposed to predominantly work on the Scarborough Project on Murujuga or in Perth will be required to undertake the online CAT.

All employees and relevant contractor personnel, subcontractors and other service providers in senior or management positions, or senior construction supervisory staff positions on Murujuga, will be required to undertake the on-Country CAT.

8.3 Reporting

8.3.1 Routine reporting

Routine reporting, including that specified in Table 7-1 and Table 7-2, will be incorporated in the Compliance Assessment Report as specified in Part 4 of the Ministerial Statement.

8.3.2 Incident Reporting

Under Condition 4-5 of Ministerial Statement 1172, any non-compliance with the Ministerial Statement must be reported to the CEO of DWER within 7 days of that non-compliance being known. Notification will also be made to MAC at the same time.

Under Condition 7-6(1) of the Ministerial Statement, if monitoring, tests, surveys or investigations indicate non-achievement of management target(s) specified in this CHMP, the non-achievement must be reported to the CEO of DWER within 21 days of that non-achievement being identified. Under Condition 7-6(3) a report must be provided to the CEO of DWER within 90 days of the non-achievement being reported, including:

(a) The cause of the management target(s) being exceeded,

(b) The findings of the investigation process detailed below,

(c) Details of any revised and/or additional management actions, and

(d) Relevant changes to the proposal activities.

Under Condition 7-7(3) of the Ministerial Statement, if monitoring, tests, surveys or investigations indicate that one or more management action(s) have not been implemented, a report must be provided to the CEO of DWER within 28 days of the non-compliance being identified, including:

(a) The cause for failure to implement management target(s),

(b) The findings of the investigation process detailed below,

(c) Relevant changes to the proposal activities, and

(d) Measures to prevent, control or abate environmental harm which may have occurred.

Woodside will conduct an investigation through its Health Safety and Environment Event Reporting and Investigation Procedure where:

- required by the Ministerial Statement,
- there is unexpected actual or suspected damage or loss to any heritage site, object or value, or
- a 'near miss' that threatened to cause unexpected damage or loss to any heritage site, object or value.

In the event an investigation is required, Woodside's Indigenous Affairs Manager will notify MAC of the cause of the investigation and keep MAC informed of any relevant progress throughout the investigation.

The process for conducting an investigation must include:

- Event response
  - Prevent further harm to heritage sites, objects or values
  - Notify the Woodside Indigenous Affairs Manager and Senior Corporate Affairs Adviser—Heritage
  - Preserve the scene (cordon of the area)
  - In collaboration with Traditional Custodians, ascertain the extent of any damage
  - In collaboration with Traditional Custodians, determine what cultural procedures, if any, are required
  - In collaboration with Traditional Custodians, establish what steps, if any, must be taken to rehabilitate the area.
  - Implement remediation activities
- Reporting an event
  - Determine the actual impact and potential risks
  - Notify relevant Woodside personnel relative to the seriousness of the incident
  - Notify Traditional Custodians of any actual impacts on heritage sites or values
  - Notify Department of Planning, Lands and Heritage of any actual impacts on heritage sites or values
- Investigate the event
  - Understand what actually occurred.
  - Identify what was intended to happen.
  - Explain why these were different.
- Communicate learnings from the event and investigation

8.4 Adaptive Management

The ability to respond to new heritage information is particularly important for managing cultural heritage values, particularly where values change or emerge over time. In line with the concept of adaptive management, the management actions presented in this CHMP shall be monitored, reviewed, evaluated and updated, as required.

Any updates to this CHMP must be submitted to the CEO of the Department of Water and Environmental Regulation for approval in accordance with the requirements of Ministerial

Statement 1172. Under Condition 7-9 of Ministerial Statement 1172, Woodside must implement the latest revision of the CHMP which the CEO has confirmed by notice in writing satisfies the relevant requirements of that Ministerial Statement.

An update to this CHMP must be considered and, where undertaken, provided as soon as practicable to the CEO following any of the triggers listed in Table 8-2.

Table 8-2: Triggers for updating this CHMP

Trigger	Required changes
Addition of new areas to the Development Envelope	Update the Project summary (Section 1.1) and the definition of the Development Envelope (Section 7.3.1). Update Section 5 with any additional heritage values and a significance assessment of these values. Update Section 6 with an assessment of any impacts the Project may have on new or previously identified heritage values. Update Section 7 with any risk-based management actions required to avoid or minimise impacts added to Section 6.
Changes to the methodology for Project construction with potential to increase type or scale of heritage impacts	Update the Project summary (Section 1.1) Update Section 3 with the updated activity description. Update Section 6 with an assessment of any new impacts the Project may have on previously identified heritage values. Update Section 7 with any risk-based management actions required to avoid or minimise impacts added to Section 6.
A recommendation of the HMC requires updates to this CHMP and that recommendation is reasonably practical	Updates as specified by the HMC recommendation.
Changes to management actions or obligations as a result of implementing the Chance Finds Procedure (Section 8.4.2)	Update Section 5 with any additional heritage values and a significance assessment of these values. Update Section 5.5 with a summary of any additional heritage assessments undertaken. Update Section 4 with any advice from Traditional Custodian monitors. Update Section 6 with an assessment of any impacts the Project may have on new or previously identified heritage values. Update Section 7 with any risk-based management actions required to avoid or minimise impacts added to Section 6.
Changes to management actions or obligations as a result of incident investigation	Update Section 5 with any additional heritage values and a significance assessment of these values. Update Section 5.5 with a summary of any additional heritage assessments undertaken. Update Section 4 with any advice from Traditional Custodians. Update Section 6 with an assessment of any impacts the Project may have on new or previously identified heritage values. Update Section 7 with any management actions required to remedy damage to heritage sites. Update Section 7 with any risk-based management actions required to avoid or minimise impacts added to Section 6.
Changes to this CHMP are agreed as necessary between Woodside and Traditional Custodians	Updates as agreed between Woodside and Traditional Custodians
Identification of any other heritage values that may be impacted by the Project	Update Section 5 with any additional heritage values and a significance assessment of these values Update Section 6 with an assessment of any impacts the Project may have on new or previously identified heritage values. Update Section 7 with any risk-based management actions required to avoid or minimise impacts added to Section 6.

Trigger	Required changes
Updates are identified as required following a review under Condition 7-8 of Ministerial Statement MS1172	Updates as identified.
Regulatory / legislative change	As required by the regulatory / legislative change

In addition to the monitoring or management actions as specified in Table 7-1 and Table 7-2, each calendar year in which the activities described in Section 3 are undertaken, Woodside will conduct reviews of compliance with this CHMP. These reviews must include verification that the relevant management actions specified in Section 7 have been implemented, assess the effectiveness of these in meeting the management targets specified in Table 7-1 and Table 7-2, and if the management targets are not achieved, an investigation led by Woodside's risk and assurance team will be undertaken.

8.4.1 Heritage Management Committee

Following consultations with MAC it was requested that Woodside include in this CHMP a mechanism to address the inclusion of new heritage information in this CHMP (Section 8.4). In particular it was requested that a formal mechanism be established to address any new ethnographic values identified through the additional ethnographic survey discussed in Section 5.5.9.

On 1 February 2022, Woodside proposed the establishment of a Heritage Management Committee (HMC) whose role would be "to consider the necessary mitigation measures required to address any new heritage information arising following certain milestones related to the Scarborough Project" and "advise Woodside where any additional mitigation measures are recommended and of any other actions MAC or Woodside should consider". This proposal required recommendations of the HMC to be unanimous, without limiting MAC's right to provide additional advice to Woodside.

In a letter signed 7 October 2022, MAC responded to Woodside's proposal, specifying that membership of the HMC should include:

- MAC's Circle of Elders;
- MAC's Board and/or executive;
- MAC staff;
- Woodside; and
- Appropriately qualified heritage experts agreed between MAC and Woodside.

MAC's letter also clarified the milestones which may trigger a meeting of the HMC:

- Finalisation of the report from the Phase II ethnographic survey (see Section 5.5.9,
- Conclusion of any future heritage assessment activities agreed by Woodside and MAC to inform the management of heritage for the Scarborough Project
- Any proposed changes to the methodology for construction of the Scarborough Project requiring an update to the Scarborough CHMP or the management of Cultural and Spiritual Values;
- Following the discovery or identification of new heritage values relevant to the construction or operation of the Scarborough Project
- Following the discovery or identification that heritage values previously identified beyond the Scarborough Project are also relevant to the construction or operation of the Scarborough Project

Recommendations of the HMC will be implemented where they (independently or in conjunction with other actions) lower the risk of impacts to heritage to a level that is as low as reasonably practicable (ALARP). ALARP is defined as a level of risk that cannot be reduced further without sacrifices that are grossly disproportionate in relation to the benefits gained. Woodside will also comply with relevant regulations, legislation (including the ACHA) and principles and management actions contained in this CHMP.

The process for addressing new information, therefore, is as follows:

1 Upon becoming aware of any matter that would trigger a meeting of the HMC, Woodside is to notify MAC and request a meeting of the HMC. Woodside must notify DWER of the trigger and meeting request within 5 business days of contacting MAC.

2 Woodside and MAC are to agree on the appropriate heritage experts to be engaged. Timing of the meeting should be as soon as practicable, but it is acknowledged that flexibility will be required particularly during law time to account for the cultural obligations of elders.

3 Relevant information must be made available to attendees prior to the meeting.

4 The HMC is to meet to discuss the relevant information provided and develop recommendations to Woodside.

5 Woodside must notify DWER of any recommendations within 10 business days of receiving recommendations of the HMC, along with any details on the implementation thereof.

6 Woodside must implement all ALARP recommendations of the HMC.

7 Where the recommendations are not considered ALARP—for example due to implementation of the recommendation resulting in a risk to safety or violation of a regulation or legislation—Woodside must:

   a. Notify the members of the HMC that it will not implement the recommendation, the reason for not implementing the recommendation, and any alternative actions being undertaken to align with ALARP,

   b. Notify DWER that it will not implement the recommendation, the reason for not implementing the recommendation, and any alternative actions being undertaken to align with ALARP,

   c. Take reasonable steps to receive timely responses from the HMC and DWER to the notifications in a and b, proportionate to the urgency of action to be undertaken,

   d. Implement any alternative actions committed to in a or b with necessary modifications after consideration of the responses in c, and

   e. Respond to any subsequent correspondence from DWER or the HMC members.

8 Where recommendations of the HMC require an update to this CHMP, Woodside must:

   a. Notify DWER of the nature of any proposed change

   b. Provide DWER with a proposed timeline to submit an updated CHMP to DWER

   c. Continue to implement the latest approved CHMP in line with condition 7-8 of Ministerial Statement 1172 in addition to any additional reasonable recommendations until the updated CHMP is approved, and

   d. Submit an undated CHMP to DWER for approval in line with condition 7-8 of Ministerial Statement 1172.

8.4.2 Chance Finds Procedure

In the event of the discovery of what appears to be a heritage site or Aboriginal cultural object all activities in the vicinity must cease immediately and the Chance Finds Procedure under the *Pluto*

LNG Cultural Heritage Management Plan – Commissioning and Operations Phase and *Pluto LNG Aboriginal Cultural Heritage Management Procedures – Commissioning and Operations Phase* must be complied with and is set out below in terms relevant to the current Project:

- Person who discovers the heritage object must inform the on-site Construction Manager and Woodside Senior Corporate Affairs Adviser—Heritage.
- Woodside Senior Corporate Affairs Adviser—Heritage or their delegate must immediately cordon off the area.
- Woodside Senior Corporate Affairs Adviser—Heritage must notify a qualified consultant archaeologist.
- Woodside Senior Corporate Affairs Adviser—Heritage shall consult with the appropriate Traditional Custodians to determine whether it is a heritage site and if so, how the site should be managed.
- Woodside Senior Corporate Affairs Adviser—Heritage shall consult with a qualified consultant archaeologist and the Department of Planning, Lands and Heritage to determine whether it is a heritage site and if so, how the site should be managed.
- Where a new heritage site(s) is located, the Woodside Senior Corporate Affairs Adviser—Heritage will notify the Department of Planning, Lands and Heritage of its existence in accordance with existing approvals and legislation.
- The site is to stay in situ until agreed management measures are implemented consistent with existing approvals and legislation.

If the suspected heritage object includes human remains, the Senior Corporate Affairs Adviser—Heritage must also notify:

- immediately, the Western Australia Police Force (phone: 131 444) of the location of the remains, that the remains are likely to be Aboriginal in origin, and that it is appropriate that Traditional Custodians and an archaeologist are present during any handling of the remains; and
- the Office of the Federal Environment Minister in accordance with Section 20 of the ATSIHPA.
- No further action may be taken in relation to the remains until approval is provided by the Western Australian Police Force or State Coroner.
- Work must not recommence in the vicinity of the heritage object until the Senior Corporate Affairs Adviser—Heritage provides written approval. The Senior Corporate Affairs Adviser—Heritage must only provide written approval for works to recommence after following all of the above steps and implementing any agreed management measures.

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Appendix A

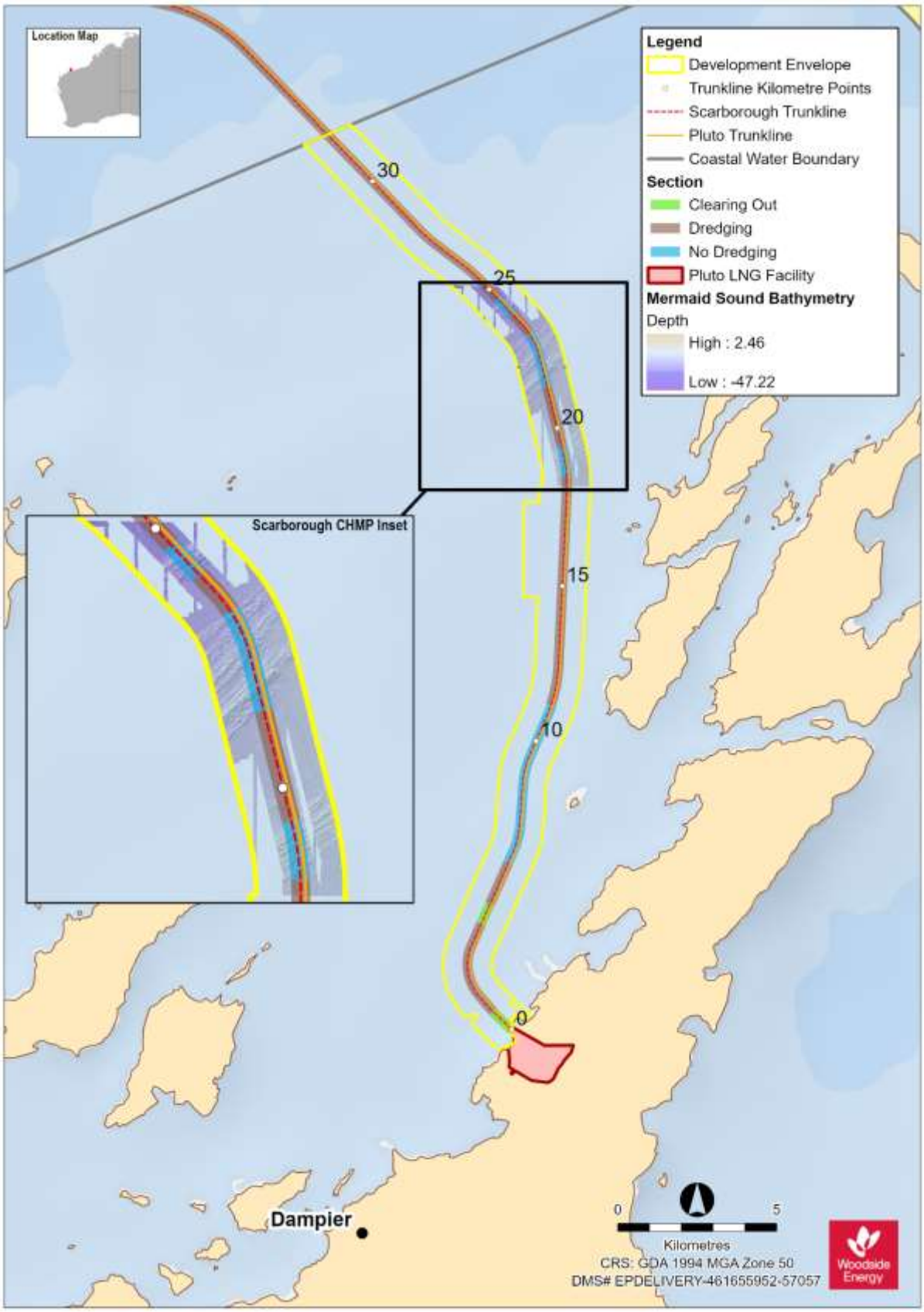

Figure A-1: Proposed dredging activities and trunkline footprint.

Appendix B

Table B-0-1 identifies the features and values in Table 5-7 that each of the proposed activities in the Development Envelope in Section 3 has the potential to impact if no mitigations are implemented beyond conducting the activities in line with the project design and existing mitigations (e.g. existing fences providing visual delineation of the Onshore Project Area). Features and values may be impacted directly (marked **D**) or indirectly (marked **I**). Potential impacts may already be managed or partly managed under other management plans. No impacts are included for Activity 7: Borrow Ground Dredging as this activity will occur only in Commonwealth waters and is outside the scope of this CHMP.

Table B-0-1: Identification of possible impacts to heritage values

		1: Site Preparation	2: Dredging	3: Spoil Disposal	4: Trunkline Shore Pull	5: Trunkline Installation	6: Stabilisation	7: Borrow Ground Dredging	8: Span Rectification	9: Shore Reinstatement	10: Contingent Activities	11: Infrastructure
A	Tangible Heritage	I								I		I
A.1	Features with scientific/ archaeological values	I								I		I
A.1.a	Petroglyphs	I								I		
A.1.b	Artefact scatters	I								I		
A.1.b.i	Site 19675 (Tool shed)	I								I		
A.1.c	Stone arrangements and structures											
A.1.c.i	Fish Traps											
A.1.d	Middens											
A.1.d.i	Shells											
A.1.e	Grinding patches											
A.1.f	Quarries											
A.1.g	Rock Shelters											
A.1.h	Camp sites											
A.1.i	Modified trees											

		1: Site Preparation	2: Dredging	3: Spoil Disposal	4: Trunkline Shore Pull	5: Trunkline Installation	6: Stabilisation	7: Borrow Ground Dredging	8: Span Rectification	9: Shore Reinstatement	10: Contingent Activities	11: Infrastructure
A.2	Burials											
B	Ethnographic sites	**I**	**I**	**I**		**I**	**I**			**I**	**I**	**I**
B.1	Features with spiritual values											
B.1.a	Songlines											
B.2	Features with social/cultural values		**D**									
B.2.a	Places for which access must be preserved		**D**			**D**	**D**					**D**
B.2.b	Places for which amenity must be preserved	**I**	**I**	**I**			**I**			**I**	**I**	
B.2.c	Places for which privacy must be preserved											
B.3	Features with aesthetic values		**I**	**I**			**I**			**I**	**I**	
B.4	Features with historic values											
B.4.a	Massacre sites											
B.5	Ceremonial places											
B.6	Hunting places	**I**	**I**	**I**						**I**	**I**	**I**
B.7	Meeting places	**I**								**I**		
B.8	Named places											
C	Intangible Heritage	**I**	**I**	**I**						**I**	**I**	**I**
C.1	Living culture	**I**	**I**	**I**						**I**	**I**	**I**
C.1.a	Customs	**I**	**I**	**I**						**I**	**I**	**I**

		1: Site Preparation	2: Dredging	3: Spoil Disposal	4: Trunkline Shore Pull	5: Trunkline Installation	6: Stabilisation	7: Borrow Ground Dredging	8: Span Rectification	9: Shore Reinstatement	10: Contingent Activities	11: Infrastructure
C.1.b	Stories											
C.2	Indigenous traditional knowledge											
C.2.a	Animals of medicinal/ food/economic value		**D**	**I**			**D**				**I**	**I**
C.2.b	Minerals of medicinal/ food/economic value											
C.2.c	Plants	**I**	**I**	**I**						**I**	**I**	
C.2.c.i	Plants of medicinal/ food/economic value	**I**	**I**	**I**			**D**			**I**	**I**	
C.2.c.ii	Plants or animals of totemic value	**I**	**I**	**I**			**D**			**I**	**I**	**I**
C.2.c.iii	Plants or animals of ecological value	**I**	**I**	**I**			**D**			**I**	**I**	**I**
C.2.c.iv	Plants or animals of ceremonial value	**I**	**I**	**I**			**D**			**I**	**I**	**I**
C.2.c.v	Plants or animals with connections to song lines	**I**	**I**	**I**			**D**			**I**	**I**	**I**
C.2.c.vi	Plants used for shelter										**I**	**I**
D	Heritage Landscapes	**I**								**I**		**I**
D.1	Conservation zones	**I**								**I**		
D.2	Volcanic rock on the seabed											
D.3	Submerged calcarenite ridges		**D**									
D.4	Submerged hills											

		1: Site Preparation	2: Dredging	3: Spoil Disposal	4: Trunkline Shore Pull	5: Trunkline Installation	6: Stabilisation	7: Borrow Ground Dredging	8: Span Rectification	9: Shore Reinstatement	10: Contingent Activities	11: Infrastructure
D.5	Water sources											
D.5.a	Rivers											
D.5.b	Springs											
D.6	Peat beds											
D.7	Protected areas											
E	Features with National Heritage Values											
F	Features with Outstanding Universal Values	**I**								**I**		
G	Submerged heritage											**I**
G.1	Shipwrecks											**I**
H	Features with values to neighbouring groups	**I**	**D**	**I**		**D**	**D**			**I**	**I**	**I**

Appendix C

The following applications of national or international guidance and recommendations of heritage assessments outlined in Section 5.5 have been considered in the context of Management Actions as set out in Table C-1 below

Table C-1: Assessment of National and International Guidance

Application	Source	Implementation
Involve traditional knowledge holders in protection of Indigenous cultural heritage.	*Charter for the Protection and Management of the Archaeological Heritage*, Article 2.	This guidance is applied through Management Actions MA5, MA6, MA13, MA14, MA23, MA25, MA26 and MA27. Additionally, this CHMP and its Management Actions generally have been informed by consultation with Traditional Custodians as set out in Section 4.
Any revision of management actions for the protection of archaeological heritage must be informed by archaeological assessment.	*Charter for the Protection and Management of the Archaeological Heritage*, Article 4.	Archaeological assessments completed to date are set out in Section 5.5. Recommendations from these assessments are included in this table.
Protection of underwater cultural heritage through in situ preservation must be considered as the first option;	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 1	In situ preservation of underwater heritage is prioritised by seeking to avoid areas of heritage sensitivity and minimise impacts wherever it is not possible to confirm with certainty that heritage values do not exist. This guidance is applied through Management Actions MA2, MA3, MA15, MA16, MA17, MA18, MA20, MA22 and MA24. Though archaeological assessment has concluded the likelihood of archaeological material surviving along exposed calcarenite ridges in Mermaid Sound is very low, MA24 is included at the request of MAC that these areas be avoided.
Removal/salvage of artefacts must only be used as a mitigation of last resort	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 4	
Disturbance of human remains and venerated/spiritually significant sites must be avoided where possible	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 5	
Impacts to heritage must be minimised and mitigated where possible;	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 3	The Project is designed to minimise impacts wherever it is not possible to confirm with certainty that heritage values do not exist. Additionally, the methodologies applied seek to minimise direct impacts through limitations on areas of dredging, using a previously dredged shore crossing trench, the use of a Trailer Suction Hopper Dredge which doesn't have the strength to disturb harder geologies, and a design approach that involved surface pipeplay and burial which will protect in-situ (particularly sub-surface) sites. This guidance is applied through the project design (see Section 3).
Non-destructive construction techniques must be used where possible	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 4	
Non-intrusive pipe-lay techniques must be utilised where possible	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 16	
Mitigations and avoidance strategies must be adaptive to new information	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 12	This CHMP is adaptive to new information as per Section 8.4.
Significance and impact assessments must be undertaken ahead of the Project commencing	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 14	Significance and impact assessments have been undertaken within this CHMP in Sections 5 and 6 respectively. This has informed the development of all Management Actions.

Application	Source	Implementation
Archaeological studies must include desktop research, landscape/site assessment and impact assessment	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 15	Archaeological assessments completed to date are set out in Section 5.5. Recommendations from these assessments are included in this table.
Heritage mitigations must be appropriately resourced	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 17	Management Actions in this CHMP will be fully resourced. This is not considered an additional Management Action.
Revisions to this CHMP must consider both immediate impacts from construction and long-term impacts to heritage sites	*Annex to the Convention on the Protection of the Underwater Cultural Heritage*, Rule 25	Impact assessments have been undertaken within this CHMP in Section 6 and includes both immediate impacts (e.g direct destruction of sites) and long-term impacts (e.g. infrastructure impacts to landscape). This has informed the development of all Management Actions.
Project must be designed to avoid impacts to Indigenous culture, or minimise impacts where avoidance is not practical	*International Finance Corporation Guidance Note 7*, G12-13	In situ preservation of heritage will be achieved by avoiding heritage sites and minimising impacts wherever it is not possible to confirm with certainty that heritage values do not exist. This guidance is applied through Management Actions MA1, MA2, MA3, MA4, MA8, MA9, MA10, MA11, MA15, MA16, MA17, MA18, MA20, MA21, MA22, MA24, MA28 and MA29. Though archaeological assessment has concluded the likelihood of archaeological material surviving along exposed calcarenite ridges in Mermaid Sound is very low, MA24 is included at the request of MAC that these areas be avoided.
Relocation or salvage of heritage material must be used only as a last resort	ICOMOS 2013 *Burra Charter*, Article 9; Article 10	No cultural material will be salvaged as part of the Project. No salvage is required because there will be no impact to Aboriginal sites. MA28 is included at the request of MAC that Woodside commit to not disturbing any rock art.
Traditional knowledge holders must be involved in the management of heritage places	ICOMOS 2013 *Burra Charter*, Article 12; Article 26.3; ICOMOS 2013 Practice Note: *The Burra Charter and Indigenous Cultural Heritage Management*	This guidance is applied through Management Actions MA5, MA6, MA13, MA14, MA23, MA25, MA26 and MA27. Additionally, this CHMP and its Management Actions generally have been informed by consultation with Traditional Custodians as set out in Section 4. Woodside will continue to work with Traditional Custodians through Murujuga Aboriginal Corporation.
Monitor the results of this plan	ICOMOS 2013 *Burra Charter*, Article 26.4	This CHMP is adaptive to new information as per Section 8.4. This guidance is applied through Management Actions MA5 and MA6.
Review this plan	ICOMOS 2013 *Burra Charter*, Article 26.4	
Consider intangible values and connections between objects, places and living culture	*Dhawura Ngilan*	Surveys and assessments listed in Section 5.5 have not identified any impacts to intangible heritage values, including Indigenous knowledge. Significance assessment undertaken within this CHMP in Section 5 considers intangible and landscape values. This has informed the development of all Management Actions.
Protect Indigenous knowledge	*Dhawura Ngilan*	
Recognise the potential for heritage places to form part of a larger landscape, potentially across multiple traditional groups	*Dhawura Ngilan*	

Application	Source	Implementation
Consult with Indigenous people to understand the heritage values of objects and places	*Dhawura Ngilan*	This guidance is applied through Management Actions MA5, MA6, MA13, MA14, MA23, MA25, MA26 and MA27. Additionally, this CHMP and its Management Actions generally have been informed by consultation with Traditional Custodians as set out in Section 4.
Recognise Indigenous heritage alongside other forms of heritage	*Dhawura Ngilan*	Significance assessment undertaken within this CHMP in Section 5 considers Indigenous heritage values. This has informed the development of all Management Actions.
Indigenous people must not be deprived of their cultural values.	UNDRIP, Article 8(2)(a)	Impact assessment undertaken within this CHMP in Section 6 considers the impact of depriving Indigenous people of their heritage, particularly through impact to values B.2.a, B.2.b, B.2.c, H and a number of values grouped under C. This has informed the development of all Management Actions, in particular MA5, MA6, MA13, MA14, MA23, MA25, MA26 and MA27 Though no tangible heritage remains within the Onshore Project Area, MA26 is included at the request of MAC that this area be available to Traditional Custodian monitors.
Indigenous people must be permitted to practise and revitalize their cultural traditions and customs, including the right to maintain, protect and develop the past, present and future manifestations of their cultures;	UNDRIP, Article 11(1)	
Indigenous people must be permitted to maintain, protect, and have access in privacy to their religious and cultural sites;	UNDRIP, Article 12	
Indigenous people must be permitted to use their traditional medicines and to maintain their health practices, including the conservation of their vital medicinal plants, animals and minerals	UNDRIP, Article 24	
Indigenous people must be permitted to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions.	UNDRIP, Article 31	
Protection of underwater cultural heritage sites includes the natural environment that immediately surrounds them and the archaeological context, such as the positions of artefacts located within the site	UCH Strategy	Significance assessment undertaken within this CHMP in Section 6 considers landscape values. This has informed the development of all Management Actions.